

# THE RAILWAY GAZETTE

Price: Two Shillings

FRIDAY, MARCH 24, 1961

Annually £5 by post

## 35 Installations during the last 18 months OF WESTINGHOUSE SIGNALLING

Since October 1959, 35 installations of Westinghouse Power Signalling have been brought into service on British Railways.



Miniature push-button control desk at Southend Central,  
Eastern Region, British Railways.

### Eastern Region 20

*including*

Chingford  
Hackney Downs  
Enfield Town  
Broxbourne  
Harlow  
Bishops Stortford  
Shoeburyness  
Southend Central  
Southend East

### North Eastern Region 4

*including*

Tweedmouth-Smeafeld-  
Craigmill  
Pelaw

### London Midland Region 9

*including*

Oxford Road and  
London Road, Manchester

### Scottish Region 2

Glasgow Central  
Newton

In these installations, covering approx. 432 track miles, were included 18 Control Desks or panels and illuminated diagrams, 43,749 Relays, 2,596 track circuits, 577 Power worked points, 1,241 Signals.

**WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.**

82, YORK WAY, KING'S CROSS, LONDON, N.1

**BELFORT**

*... the real wood  
veneer laminate with  
the melamine surface*



*Belfort Afrormosia used for panelling in the new Railway Coaches. Photograph reproduced by permission of London Midland Region, British Railways.*

Designers have for centuries found that fine woods are the well-tested medium of their art.

In the field of design "Belfort," with its superb appearance and durable surface qualities is available in an extensive range of woods to appeal aesthetically to interior designers and railway carriage builders.

"Belfort" is ideally suited for every application where decorative wood surfaces are required.

"Belfort" laminates are available in panels 8' x 4' and in two thicknesses,  $\frac{1}{8}$ " and  $\frac{1}{4}$ "



*For descriptive literature and samples, please write to the main Railway Distributors:*

**W. A. BONNELL (1924) LTD., 8 WESTMINSTER PALACE GARDENS, ARTILLERY ROW, LONDON, S.W.1 ABBey 1061**



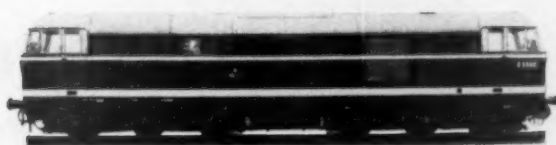
# BELFORT

## Heat resistant

## Stain resistant

**BONDED LAMINATES LIMITED**

C. H. N. VENEER MILLS, CHISENHALE ROAD, LONDON, E.3 Phone: Advance 2005



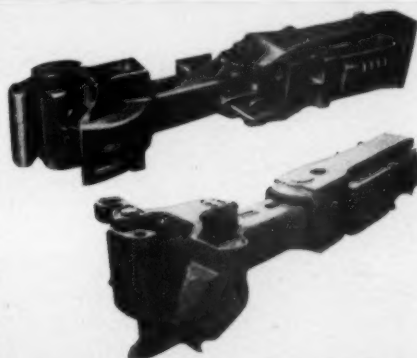
## One piece cast steel **BOGIES**



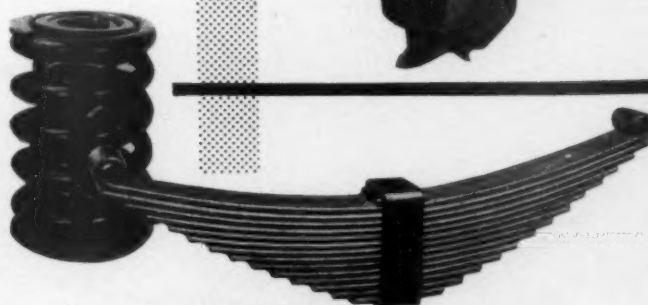
Motor Bogie Frame supplied to Beyer Peacock Ltd. and W. G. Bagnall Ltd., for the 1,250 h.p. A1A-A1A Diesel Electric Locomotives built by the Traction Division of Brush Electrical Engineering Co. Ltd. for the British Transport Commission.

## Automatic **COUPLERS** and Draft Gears

Assembled from parts of simple rugged design these couplers ensure safety to operatives, are easy to operate and require minimum maintenance.



## **SPRINGS** laminated coil and volute



**for all types of Railway Rolling Stock**



# ENGLISH STEEL

ENGLISH STEEL CASTINGS CORPORATION LTD.

ENGLISH STEEL SPRING CORPORATION LTD.

*River Don Works, Sheffield*

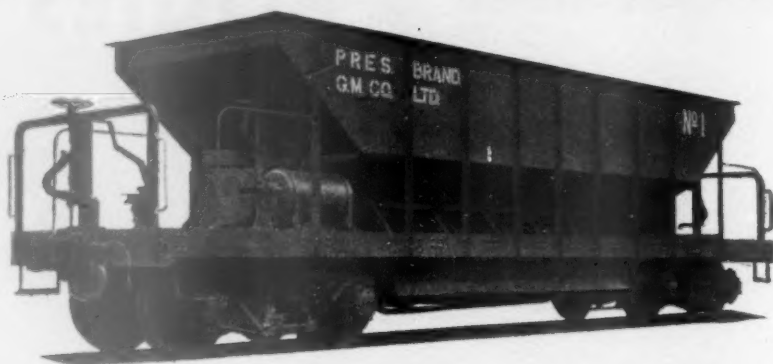
*Wholly owned subsidiaries of English Steel Corporation Ltd.*

C13

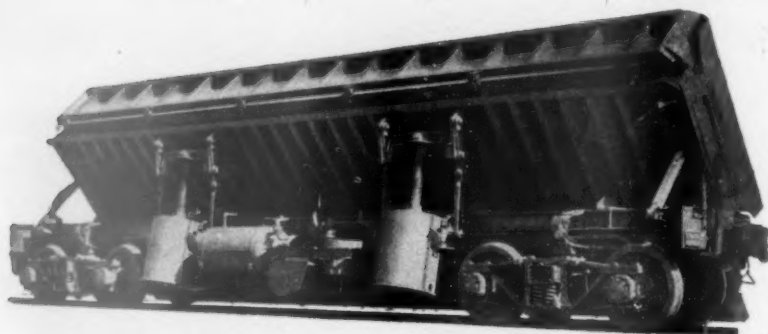
A

# ROLLING STOCK

## by **DORMAN LONG (AFRICA) LTD.**



**President Brand Gold Mining Co. Ltd.**  
**50 Ton Ore Hopper Wagon**



**South African  
Iron and Steel  
Industrial Corporation**  
**air- or steam-operated Dump Wagon**  
**(Austin-Western patent)**



**South African Railways**  
**Bogie Fruit Wagon**

## **DORMAN LONG (AFRICA) LIMITED**

**GERMISTON, TRANSVAAL, SOUTH AFRICA**

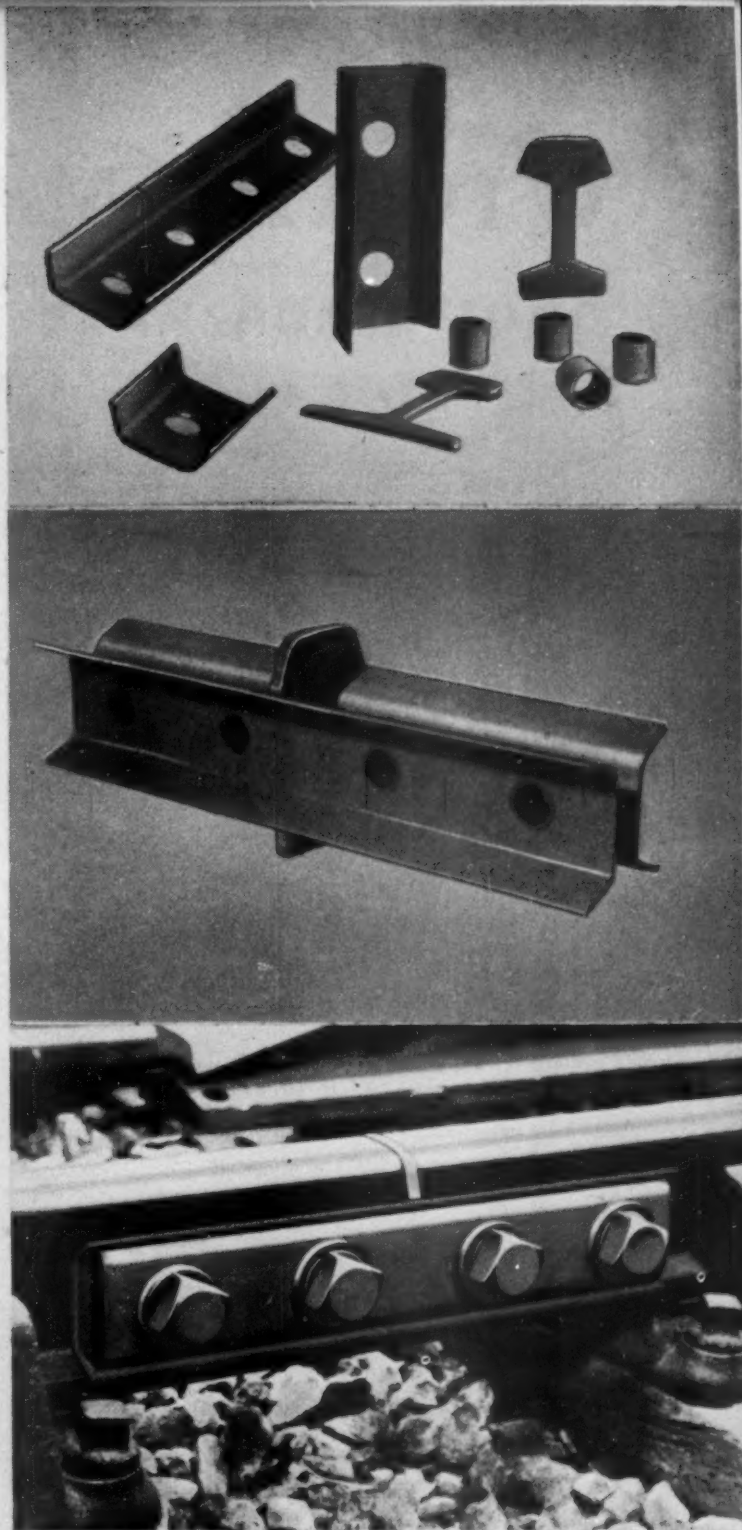


# Castle fibre

The running rail joint insulation

for block joint signalling systems

used throughout the world.



## Vulcanised Fibre Ltd

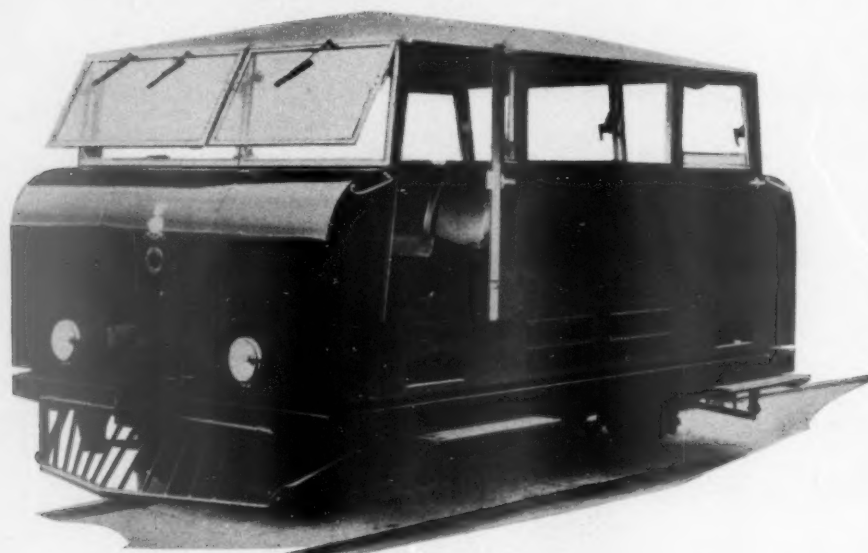
BROADFORD MILLS GUILDFORD ENGLAND

PHONE: GUILDFORD 5214-7 GRAMS: VULCANISED, GUILDFORD TELEX: 8529



MAKERS OF FINE MATERIALS

# WICKHAM OF WARE

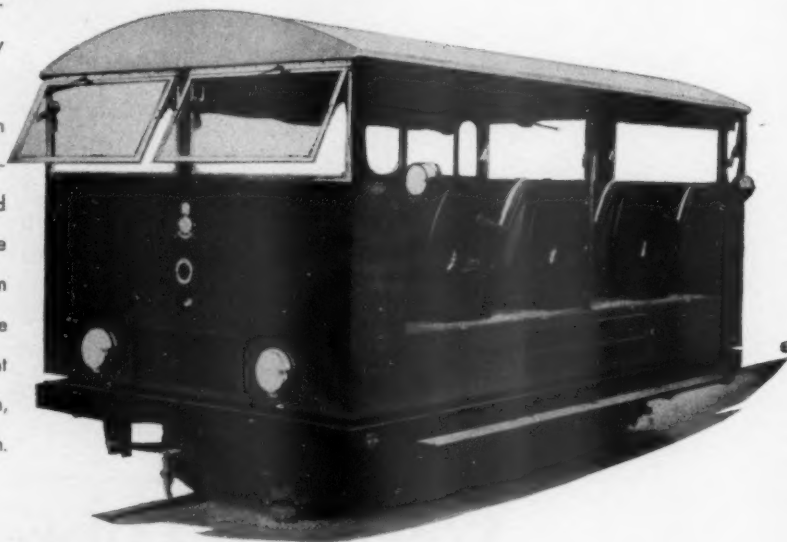


The Wickham No. 40 Senior Official's Car has a world-wide reputation. Designed to supersede the expensive use of locomotive and coach, its economical and efficient operation makes it a notable contribution to railway economy.

The No. 40 Mk. II saloon and semi-open models illustrated embody the latest improvements — more space, better visibility and improved lighting. Seating nine and twelve respectively, on exceptionally comfortable foam rubber and leather upholstered reversible seats, these 85 b.h.p. cars have controls at both ends, and four speeds in either direction, from a crawl for close inspection to 60 m.p.h. (96 kms. p.h.).

#### WICKHAM PRODUCTS:

DIESEL RAILCARS, LIGHTWEIGHT RAILBUSES, INSPECTION CARS, TOWER TROLLEYS, GANG CARS, PUMP TROLLEYS, TRACK EQUIPMENT.



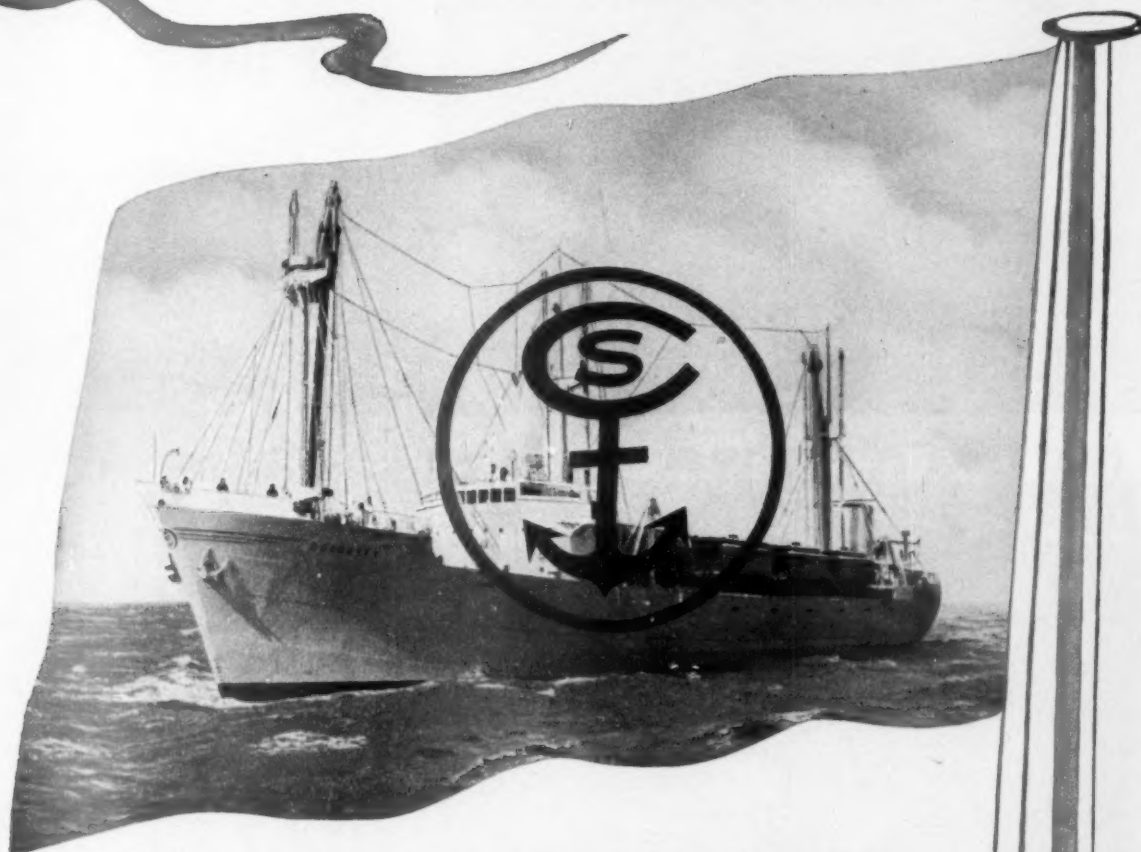
**D. WICKHAM & COMPANY LIMITED**  
WARE, HERTFORDSHIRE, ENGLAND

Telephones: WARE 394-6

Cables: Wickham Ware

PIONEERS IN

**HEAVY-LIFT TRANSPORTATION**



**BELSHIPS**

Over 30 years' specialisation in  
the transportation of Railway Rolling Stock  
World-wide service  
Lifts up to 200 tons

**BELSHIPS CO. LTD. SKIBS A/S • OSLO • NORWAY**

Managers: CHRISTEN SMITH SHIPPING CO., Haakon VII's Gate 1 • OSLO • NORWAY

London Office: BELSHIPS COMPANY LTD. • Creechurh House • Creechurh Lane • LONDON • E.C.3

Cars built by Gloucester Railway Carriage & Wagon Co. Ltd.

**DAY...**



**after DAY...**

**after DAY...**



**after DAY...**

*(over 1,725 so far in fact!)*

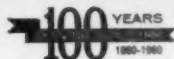
**DAVID BROWN  
HYPOID AXLE UNITS**

**keep Toronto's trains rolling along!**

For many of Toronto's citizens, working days begin and end with David Brown Hypoid Axle Units. Not that they know! The passengers are only aware of reliable train services, of workplace and home reached regularly on time. It's the railway personnel, the men who maintain the cars, who know about David Brown axle units. They know them as the

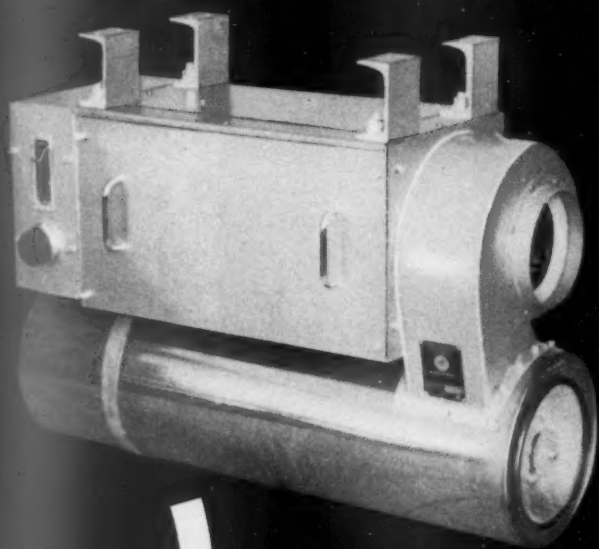
hypoids which in their five years of life have already run the equivalent of fourteen times round the equator—and still only need their normal ration of maintenance for good-as-ever service. That's the degree of reliability which is essential for the Toronto Transit Commission. That's the reliability you expect from David Brown gears!

**DAVID BROWN**



THE DAVID BROWN CORPORATION (SALES) LIMITED  
GEAR DIVISIONS, PARK WORKS, HUDDERSFIELD. Telephone: 3500.





**DRAGONAIR**

*world renowned heating for Railways  
aircraft, shipping and industry*

THE ULTIMATE IN

# RAIL-CAR HEATING

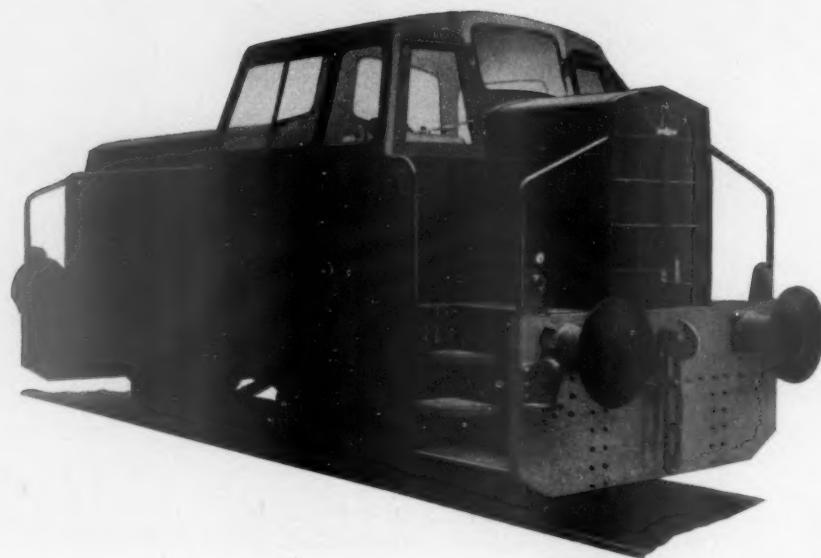
*cheap heat everywhere with automatic*

**DRAGONAIR**

DRAGONAIR LTD FARLINGTON PORTSMOUTH

Telephone: Cosham 76451





## Sentinel chose

## Laycock-Knorr

### BRAKING EQUIPMENT



View of cab interior showing  
dual driver controls.

The new Sentinel 34 ton O-4-O Diesel Hydraulic Industrial Locomotives now going into service are all fitted with Laycock-Knorr compressed air brake equipment and pneumatic sanding gear.

This equipment, together with various other types of railway vehicle braking apparatus used extensively on the continent and developed by Knorr-Bremse of Munich over the last half century, is now manufactured and offered by



## Laycock

ENGINEERING LTD

MILLHOUSES • SHEFFIELD 8

# TOWN

## DRILLING MACHINES

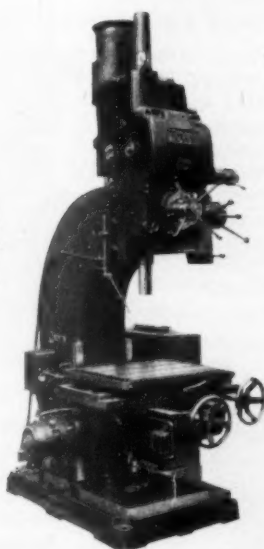
Established over 50 years, the TOWN range of radial and vertical drilling machines is noted throughout the world for modern design, reliability and ease of operation.



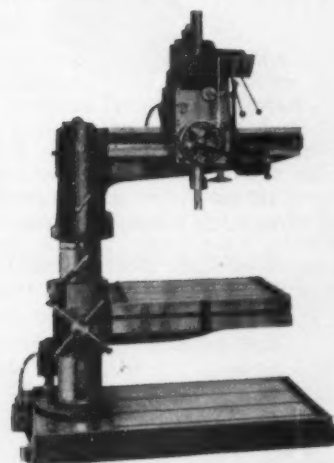
**MODEL CE2: RADIAL DRILLING, BORING, TAPPING and STUD-DING MACHINE.** Four sizes: 5' to 8', 18 speeds: 15-850 r.p.m.; drills 3½" from solid in mild steel.



**MODEL AE4: RADIAL DRILLING, BORING, TAPPING and STUD-DING MACHINE.** Seven sizes: 3' 6" to 8'; drills 3" from solid in mild steel.



**MODEL AE2: VERTICAL DRILLING MACHINE (Heavy duty model).** Two sizes: 36" and 42"; drills 3½" from solid in mild steel.



**MODEL AE5: RADIAL DRILLING, TAPPING and STUDDING MACHINE.** 42" drills 1½" from solid in mild steel or 1½" in cast iron.



**MODELS EG4 and EG8: GIRDER RADIAL DRILLING MACHINES.** Each model in five sizes: 4' to 8', 4 speeds: 160-600 r.p.m. (EG4), 8 speeds: 20-500 r.p.m. (EG8) drills up to 2" from solid in mild steel. Also made with single speed.

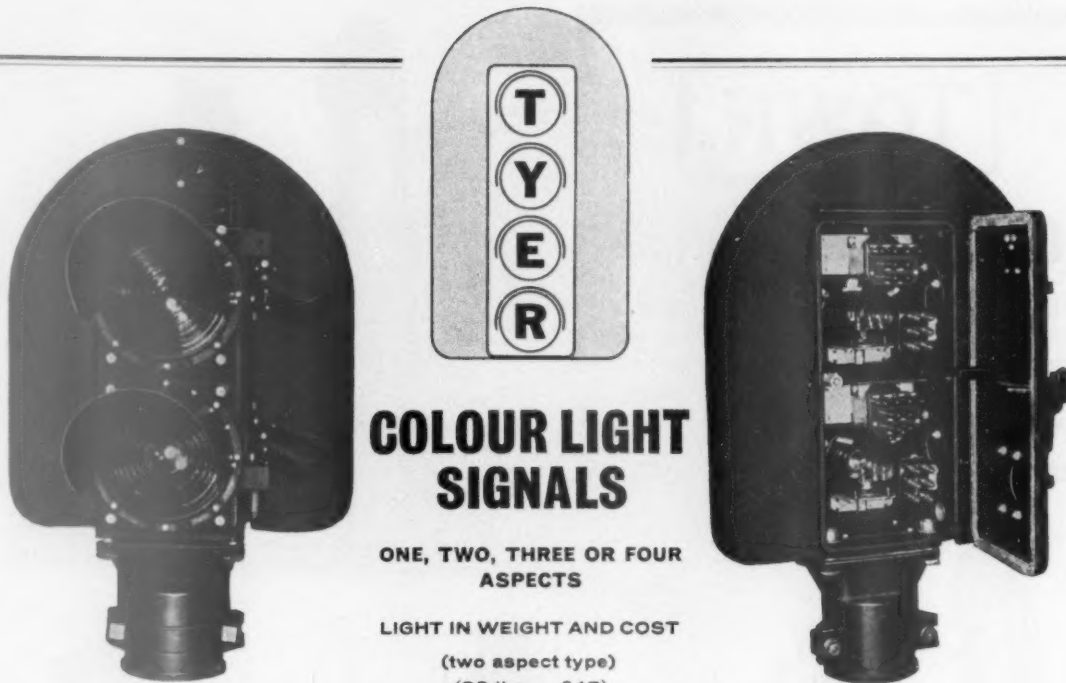
### OTHER MACHINES IN THE RANGE

are detailed in a folder 'GO TO TOWN' which is available on request. Variations on the standard range can be undertaken, and examples are also illustrated in the folder.

# FRED<sup>K</sup> TOWN & SONS LTD

ESTABLISHED • 1903

HALIFAX • YORKS  
PHONE: HALIFAX 60373/4

**LENS SYSTEM**

8½" and 5½" dia. doublet stepped lens with moulded sector for close-up indication.

Permanently mounted at correct focal spacing in housing carrying lamp holder base, thereby maintaining focus on removal of lens mounting. Externally water-tight, internally dust-tight "Spreadlite" sector lens can be fitted.

**LAMP HOLDER**

limits the insertion of lamp in relation to contact pressure. Suitable for double or triple pole lamps.

**CASEWORK**

Light alloy with each aspect in a compartment, so eliminating stray indications.

Door hinged and stayed to right or left hand side, gasketed and secured in position by suretight clamp. Flat topped to cater for route or junction indicator. Cable entry at top, bottom or either side. Mounting arrangements for pole or gantry with simple transit and elevation adjustments.

**BACKLIGHT**

fitted if required (Sidelights and back light units interchangeable).

**SIDELIGHTS**

to left or right hand side as required.

**HOODS**

12", 18" or 24" in length.

**BACKGROUND**

24" wide, radial or square topped.

**TERMINALS**

O.B.A. nut type, with or without shrouds, in each aspect compartment and/or common panel at base of unit.

**TRANSFORMERS**

To B.S.S. as made by the Company. Provision made for fitting to side or rear of each aspect.

**LAMP PROVING**

Relays provided to suit all circuit requirements.

**LAMPS**

double or triple pole type to B.S.S.

**ASPECTS:— ONE, TWO, THREE OR FOUR**

**WEIGHT:— 45 lbs, 90 lbs, 130 lbs, 180 lbs.**

*All signal units can be supplied complete with post base and ladder, or mounted on relay-battery case, complete with relays, batteries, charger and fully wired as a complete unit.*

**TYER & COMPANY LIMITED**

Established 1851

**PERRAM WORKS · MERROW SIDING  
GUILDFORD · SURREY**

*(Within the organisation of the Southern Areas Electric Corporation)*



**MANUFACTURERS OF  
RAILWAY SIGNAL AND TELEGRAPH,  
ELECTRONIC AND HUMIDITY CONTROL  
EQUIPMENT AND ALL TYPES OF  
PRECISION APPARATUS**

Telephone: Guildford 2211. Telegrams: Switchmen Guildford.

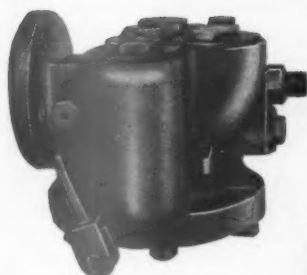


# METCALFE'S

## AIR BRAKE EQUIPMENT for

### Carriages and Wagons

OERLIKON PATENT DESIGN



#### TYPE EST3d.

This standard and basic design of Triple Valve enables the controlled application and release of brakes on goods and passenger trains. It is suitable for all sizes of brake cylinder and is in accordance with the conditions laid down for the admission of goods and passenger trains for international traffic.

Leaflet A.9.



#### TYPE EST4d/AL.

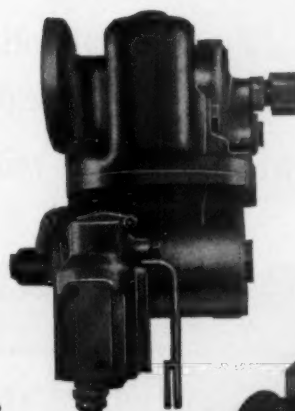
The AL device used in conjunction with the EST Triple Valve, as illustrated, enables the brake cylinder pressure to be regulated automatically in proportion to the load on the vehicle, thus enabling the maximum brake efficiency to be obtained under all conditions. Among the advantages associated with this equipment are the simplicity of installation, further, the brake cylinder filling and releasing times are unaffected by load changes.

Leaflet A.8

#### TYPE EST4d/R TRIPLE VALVE

In this instance the type R device has been added to the EST Triple Valve to enable two-stage braking to be obtained. This arrangement when applied to high speed passenger coaches and controlled by the vehicle speed enables the maximum brake efficiency to be obtained and greatly reduces the distance required for stopping a train. This style may also be used for simple load and empty braking with the two stages Hand controlled.

Leaflet A.5.

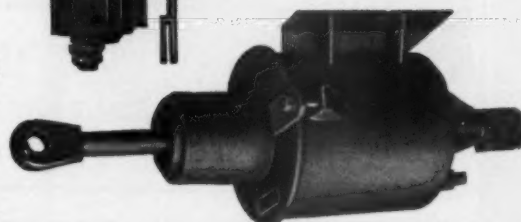


#### TYPE SB BRAKE CYLINDER

(Made under licence from STABEG)

A simple lightweight design of Brake Cylinder embodying a patent piston seal giving automatic lubrication to the cylinder walls and exceptionally long life to the seal. A further patent covers a security device which simplifies maintenance and examination of the Cylinder which is made in all standard sizes and styles.

Leaflet A.14.



## DAVIES & METCALFE LTD.

INJECTOR WORKS • ROMILEY • ENGLAND

Telephone: Woodley 2526 (2 lines) Telegrams: EXHAUST, ROMILEY

R.6.7.

**1837****A TRADE NOTICE OF SOME IMPORT**

Gentlemen of high esteem who wish to purchase  
superlative Nulac paint finishes for horseless carriages  
including steam engines, passenger carriages  
and all manner of rolling stock may wish to contact  
ROBERT KEARSLEY & COMPANY OF RIPON, YORKSHIRE  
who are active today as they will be in 1961



TELEPHONIC COMMUNICATION MAY BE MADE AT RIPON 415/6

WIRELESS TELEGRAPHY MESSAGES DIRECTED TO  
KEARSLEY, RIPON

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**THANK YOU**

# MINER

## QUALITY RAILWAY APPLIANCES

- 1 **B-18 Type Buffer** widely used in cars, coaches and locomotives where side buffers are required.
- 2 **A-120-P Draft Gear** used in combination with B-18 type buffer where hook coupling is used, either with yoke application or with pull rod through the gear.
- 3 **A-22-SAXL Draft Gear**. Thousands have been applied throughout the world where center automatic couplers are used.
- 4 **RF-333 Draft Gear**. A combination rubber-friction draft gear providing maximum shock protection in a 24 $\frac{5}{8}$ " gear pocket.

# MINER

**Railway Appliances Are in Use  
Throughout the World--**

**W. H. MINER, INC.**

OFFICE OF FOREIGN OPERATIONS

1212 Pennsylvania Building • 425 Thirteenth St., N. W. • Washington 4, D.C., U.S.A.

CABLE ADDRESS - MINER



1



2



3



4

# QUALITY

# ENV

## FOR

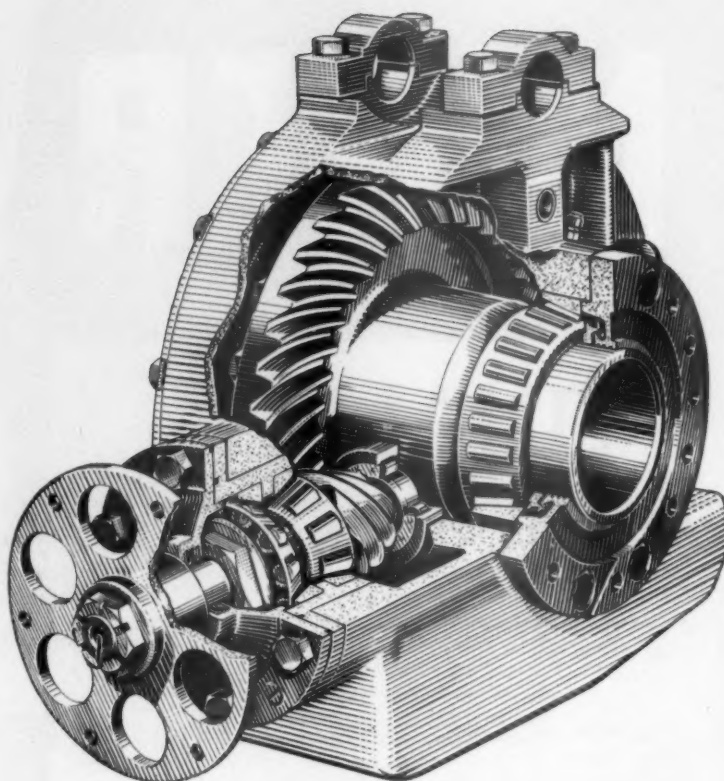
### SPIRAL BEVEL

### AND

### HYPOID GEARS

### AND

### AXLE DRIVES



The right-angle drive, which now has so many applications for diesel and electric traction, is a job for the specialist.

ENV pioneered the spiral bevel and hypoid drives in this country and have over 30 years' experience in the design and manufacture of heavy duty right-angle drives.

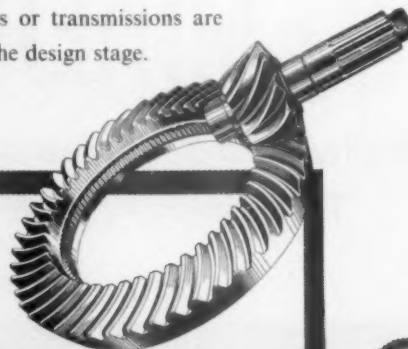
Production facilities include the most modern gear cutting and heat treatment plants, enabling precision spiral bevel and hypoid gears to be supplied with profile ground teeth when required for high speed applications.

Traction engineers and designers who need right-angle gears or transmissions are invited to communicate with ENV Technical Department at the design stage.

# ENV

FOR  
GEARS

Spiral Bevel  
Gear

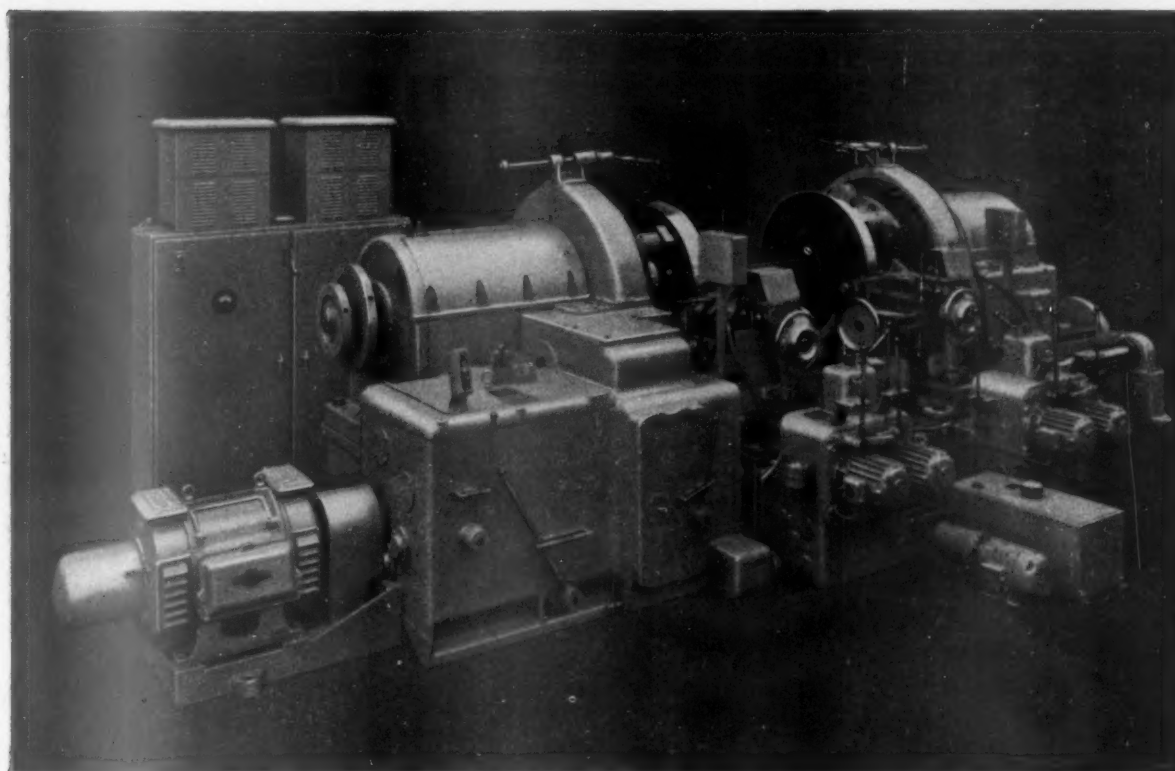


E.N.V. ENGINEERING COMPANY LIMITED, HYTHE ROAD, WILLESDEN, LONDON, N.W.10. Telephone: LADbroke 3622



AP 113





## HEAVY DUTY WHEEL LATHES

Our latest model Heavy Duty Wheel Lathe, the 4-ft. size being illustrated here, incorporates all the features which we have developed, as the result of many years' experience, in order to achieve the maximum output possible and at the same time to provide a machine which is economical in tooling and maintenance costs.

The robust construction of the main parts of the lathe can be seen from the photograph and all shafts, bearings, gears, etc., are on equally generous lines. All electrical and mechanical controls are easily accessible and those in constant use are grouped at the operator's position. Loading of the wheel sets is facilitated by the provision

of self-contained jack or hoist, as dictated by the shop layout. When preferred, through type machines can be built on similar lines.

Hydraulically operated drivers are used, in order to ensure speed of operation and equalised driving force to the work. Faceplate arrangements can be modified as required to accommodate wheel sets with non-removable roller bearing axleboxes and we have developed special collets to get the best possible grip on all types of axles. Loading times are further reduced by the incorporation of spring loaded self-adjusting spindle sleeves.

We have for many years taken a leading part in the development of tungsten carbide tools for wheel lathes and the results of this work are utilised on machines both with and without profiling arrangements. Not only can we offer fast cutting times and excellent work, but tooling costs are very economical.

Our patent Hydro-mechanical Profiling Device is very simple and effective. The profile is accurate and setting to each wheel set is easy and quick. A special point is that there is nothing in the equipment which is not within the scope of the maintenance facilities normally available. If a range of profiles is needed, the change from one to another is simple and speedy.

In addition to the type of machine described above, which is built in all sizes from 7 ft. 6 in. down, we have a highly developed Pit Type Wheel Lathe for machining wheels *in situ*, roller drive wheel lathes and a very useful range of standard wheel lathes for use where the very maximum output is not required. The latter machines are also capable of journal turning and similar work.

We are always very glad to hear of Railway Engineers' requirements for wheel lathes, so that we may show exactly what we have available to meet individual requirements.

## SCOTTISH MACHINE TOOL CORPORATION LTD.

17 Lynedoch Crescent  
Glasgow C.3.

DOUGLAS 6586/9

Lion House, Red Lion Street, Richmond, Surrey  
RICHMOND 7667/9

256 Moseley Road, Birmingham 12.  
CALTHORPE 2541

The Building Centre, Brunswick Terr., Leeds 2  
LEEDS 25250



Illustration shows treatment of  
Sroughton Sidings, Ipswich.  
Photo. by courtesy of Chief Civil  
Engineer, Eastern Region,  
British Railways.

# **CHLOREA Granular**

## **WEEDKILLER for treatment of sidings and cable-runs. *No water or track possession required.***

GRANI-SPREADERS are available for hire at nominal charges.

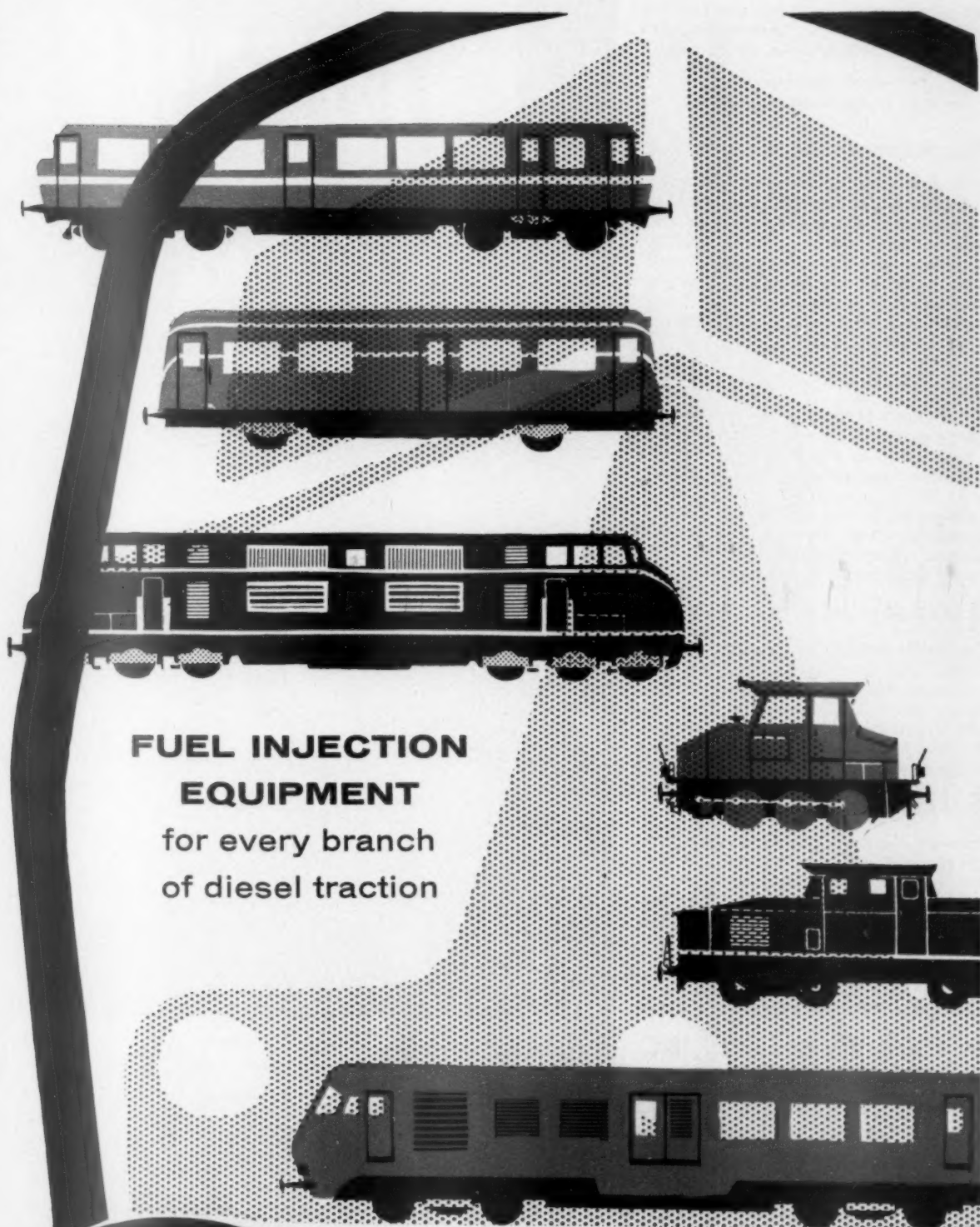
Write for further details to:

### **CHIPMAN CHEMICAL COMPANY LTD.**

2 CAXTON STREET, WESTMINSTER, LONDON, S.W.1. Telephone: ABBey 5063

Also at Trent Lane, Nottingham. Tel.: Nottingham 52397.

Morel Buildings, Stuart Street, Cardiff. Tel.: Cardiff 28561



**FUEL INJECTION  
EQUIPMENT**

for every branch  
of diesel traction



*The World's Largest Manufacturers of*

**FUEL INJECTION EQUIPMENT**

C.A.V. LIMITED ACTON LONDON W.3.

AP.111



# JACKSON

THE NAME THAT HAS CONSISTENTLY  
TYPIFIED THE BEST IN TAMPING EQUIP-  
MENT FOR MORE THAN 40 YEARS

*Let us help you to the best  
solution of your tamping problems.*

## 1 JACKSON TRACK MAINTAINER

For both putting up and maintaining track of finest, longest-lasting quality at minimum cost, this is the finest tamping machine money will buy. Powerful vibratory action and complete push-button control make it exceedingly fast. It's overwhelmingly first choice of U.S.A. railways. Available in U.S.A. standard and wider gauges.

## 2 JACKSON UNIVERSAL

An excellent production tamper which rapidly produces complete consolidation of ballasts up to 3" in diameter in proportionate out-of-face raises. Highly efficient in tamping hanging ties or sleepers. Entirely push-button operated. Jacks and automatic spacer for double joint ties optional. Available in all standard gauges from meter to widest.

## 3 JACKSON MONORAIL

A complete tamping machine ideal for spotting and smoothing, secondary programs and all yard track maintenance. Utilizes powerful "Maintainer" tamping units. Traveling, indexing and workhead are all hydraulically controlled. All standard gauges.

## 4 JACKSON HAND TAMPERS

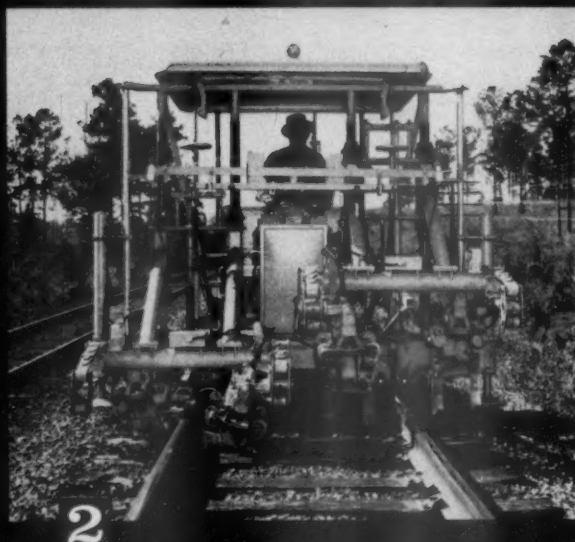
Vibratory-electric . . . operated from portable power plant serving 4 tampers. Universally used in low lift and smoothing work as well as major ballast insertion operations. Adjustable handles and interchangeable tamping blades make them quickly adaptable to all workers and tamping requirements.

*Write, wire or cable for complete information*

**JACKSON VIBRATORS, INC.**

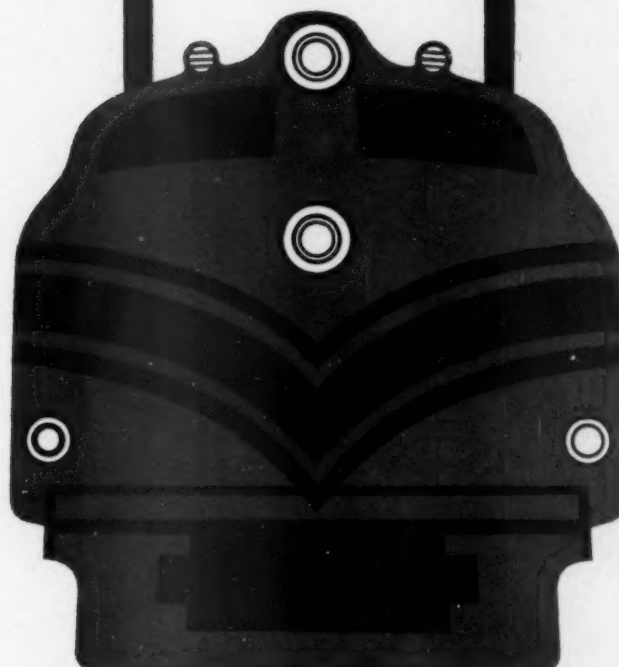
LUDINGTON, MICHIGAN

U.S.A.





take up the  
drive with  
**FERODO**



### Ferodo Sintered Metal Friction Materials

take up the drive on modern Diesel locomotives and railcars, because they—

- withstand friction, pressure and distortion better
- absorb energy and dissipate heat faster
- strongly resist 'attacking agents'—heat, cold, dampness, contamination from oil and other liquids, foreign matter
- give consistent performance, consistent smoothness

### Ferodo V-Belts

provide completely reliable non-slip drive for the power unit's auxiliary services.

### Ferodo Asbestos-Based

materials complete a range of friction products used in Diesel locomotives and rail cars throughout the world.

**FERODO**

**First-to last**



Ferodo Limited · Chapel-en-le-Frith  
Derbyshire · England

A MEMBER OF THE  
TURNER & NEWALL ORGANISATION

# BRITISH RAILWAYS ACHIEVE THE OPTIMUM IN ECONOMICAL HANDLING WITH COLES

During 3 years continuous service at Swindon Wagon Works, a Coles self-propelled 'ARGUS' crane has given "complete satisfaction", reports British Railways (Western Region). The crane is used exclusively for handling scrap metal, and its introduction has resulted in increased economies, enabling five men to be released for other work.

Records show that for an 8 hour shift—during which a maximum scrap throughput of 100 tons has been achieved—fuel consumption has averaged only 2½ gallons.



**COLES**<sup>\*</sup>  
CRANES

**THE NAME THAT CARRIES WEIGHT**

\*Registered Trade Mark

**STEELS  
ENGINEERING  
PRODUCTS LTD.**

HEAD SALES OFFICE: 143 SLOANE STREET, LONDON, S.W.1.  
SALES AND SERVICE: LONDON, BRISTOL, BIRMINGHAM, MANCHESTER,  
LEEDS, NEWCASTLE, GLASGOW.

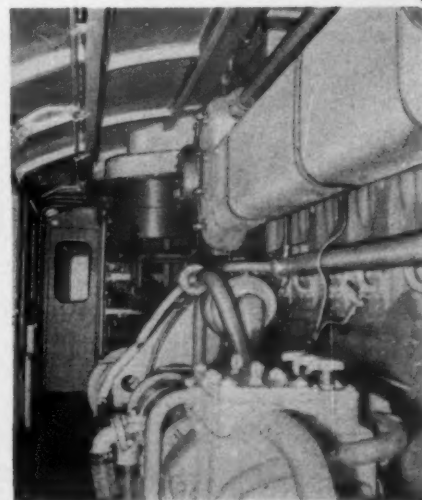


## A 450 ton load at 70km/h !

Thailand's narrow railway gauge (1 metre) called for special consideration in the design of 950 H.P. diesel-electric locomotives for her State Railways. Maximum permissible axle load was 12 tons, and the restricted body width entailed a special arrangement of mechanical and other parts.

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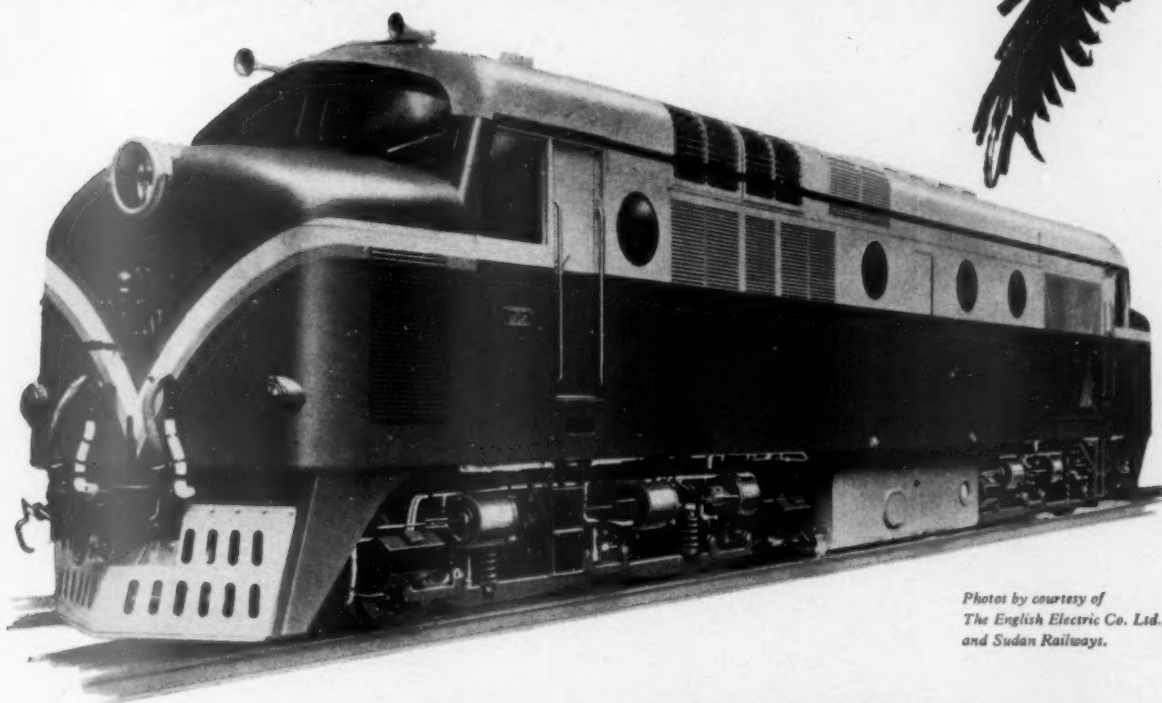
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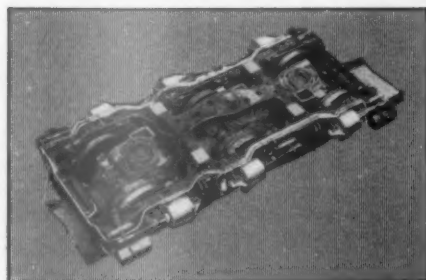
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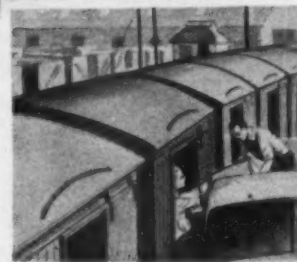


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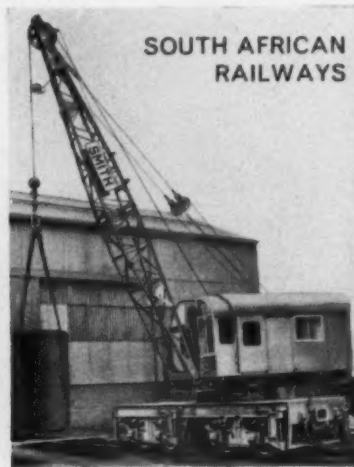




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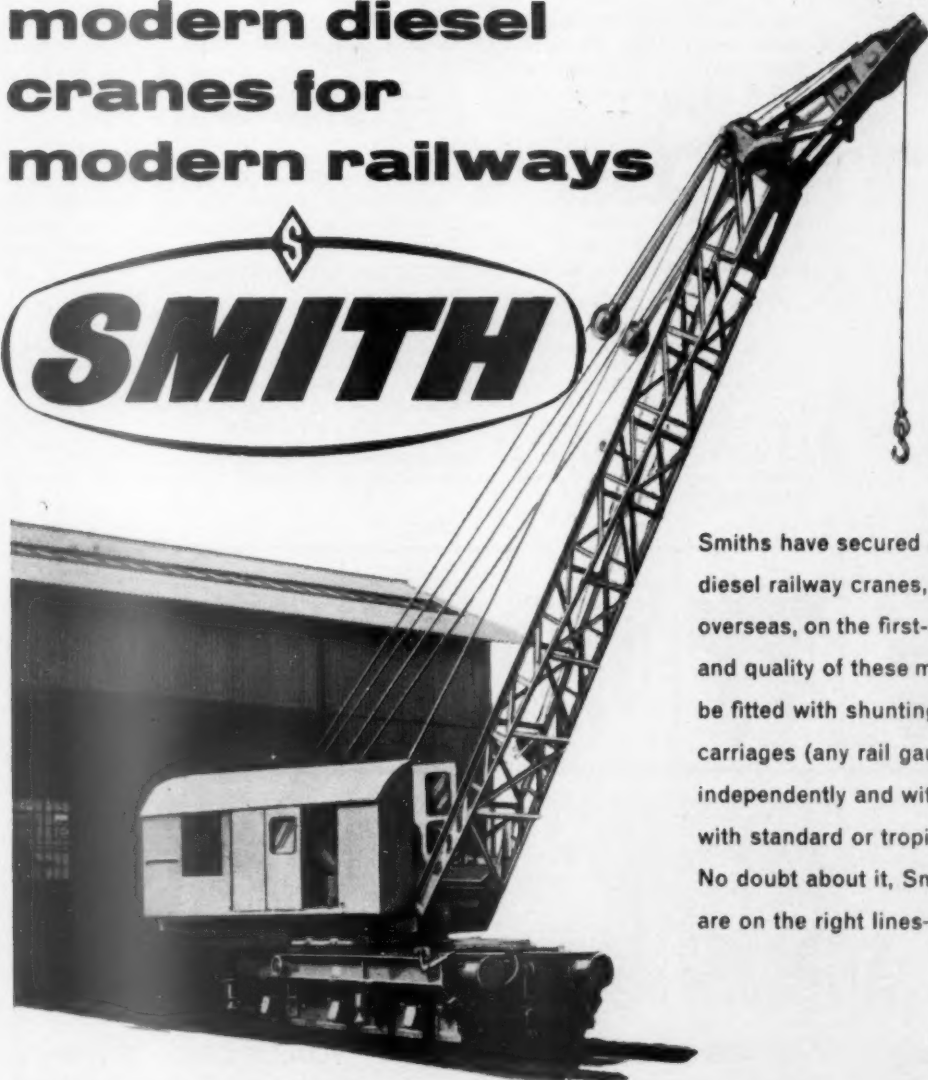


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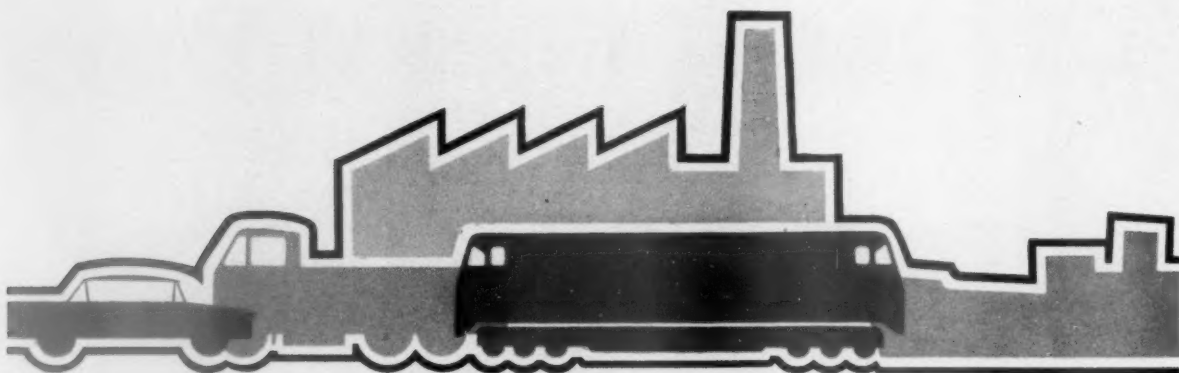
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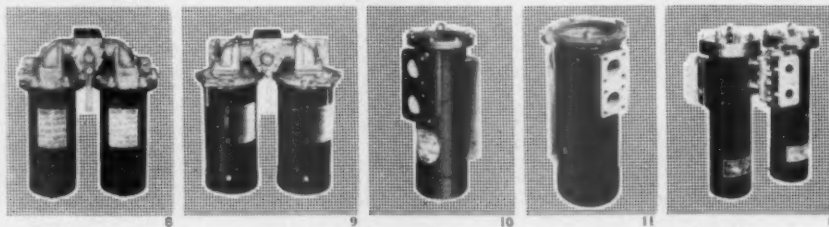
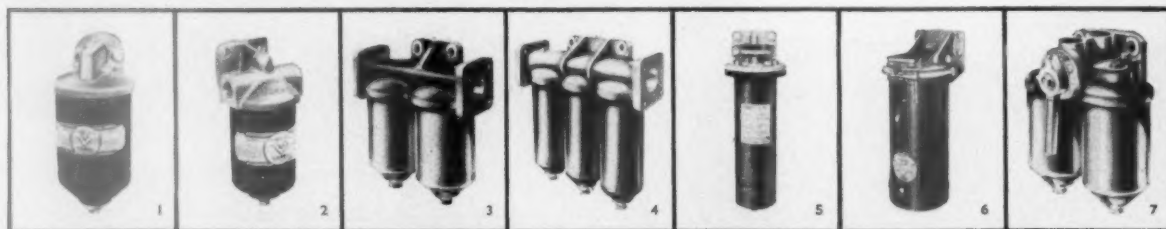
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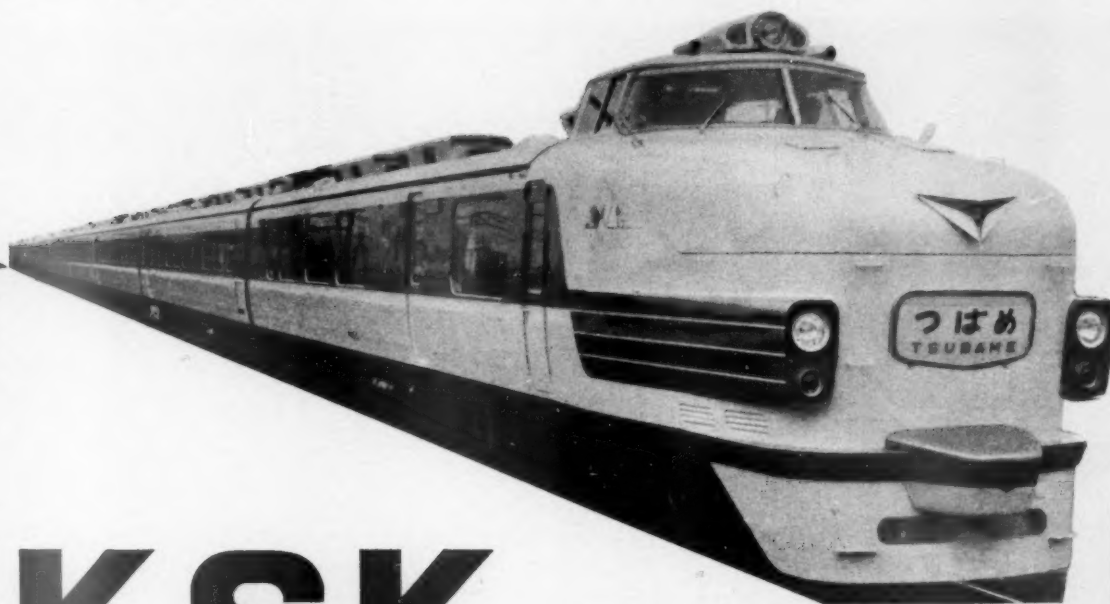
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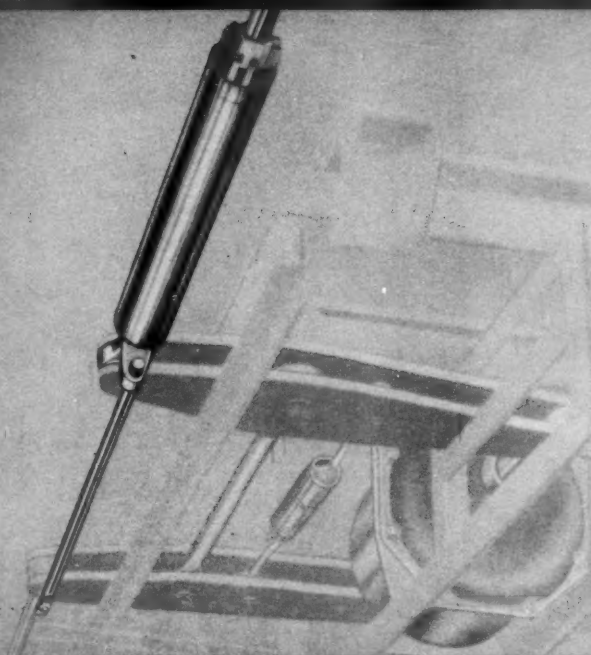
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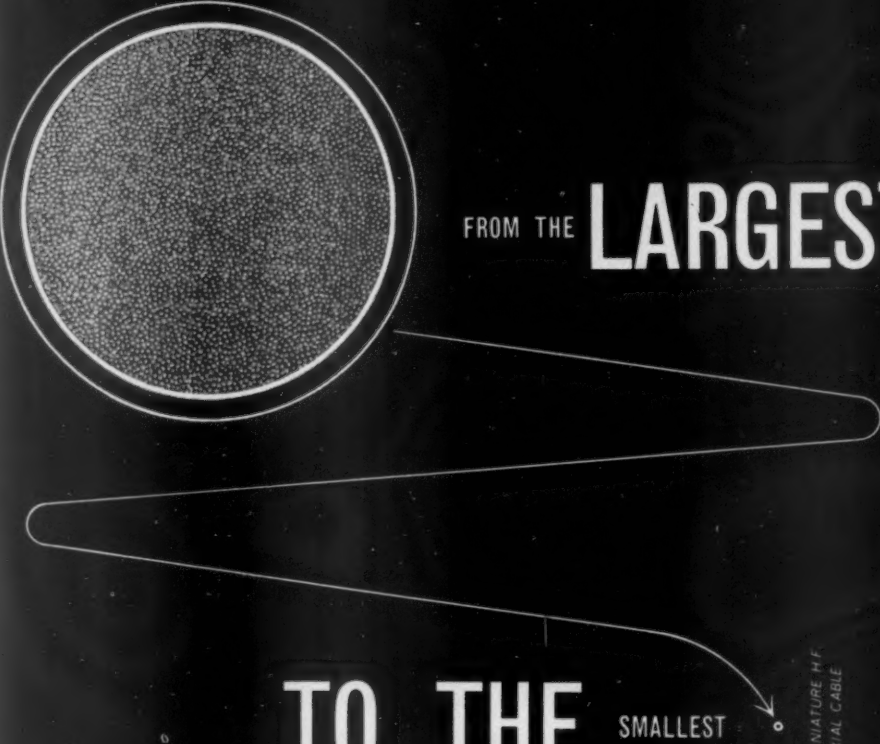
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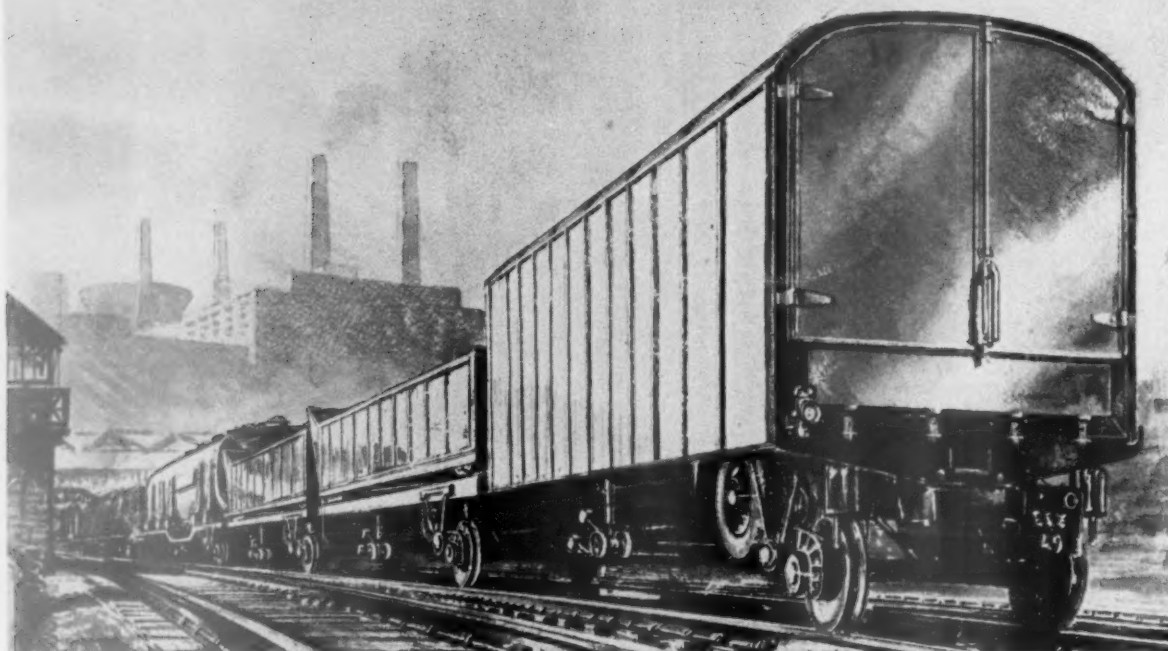
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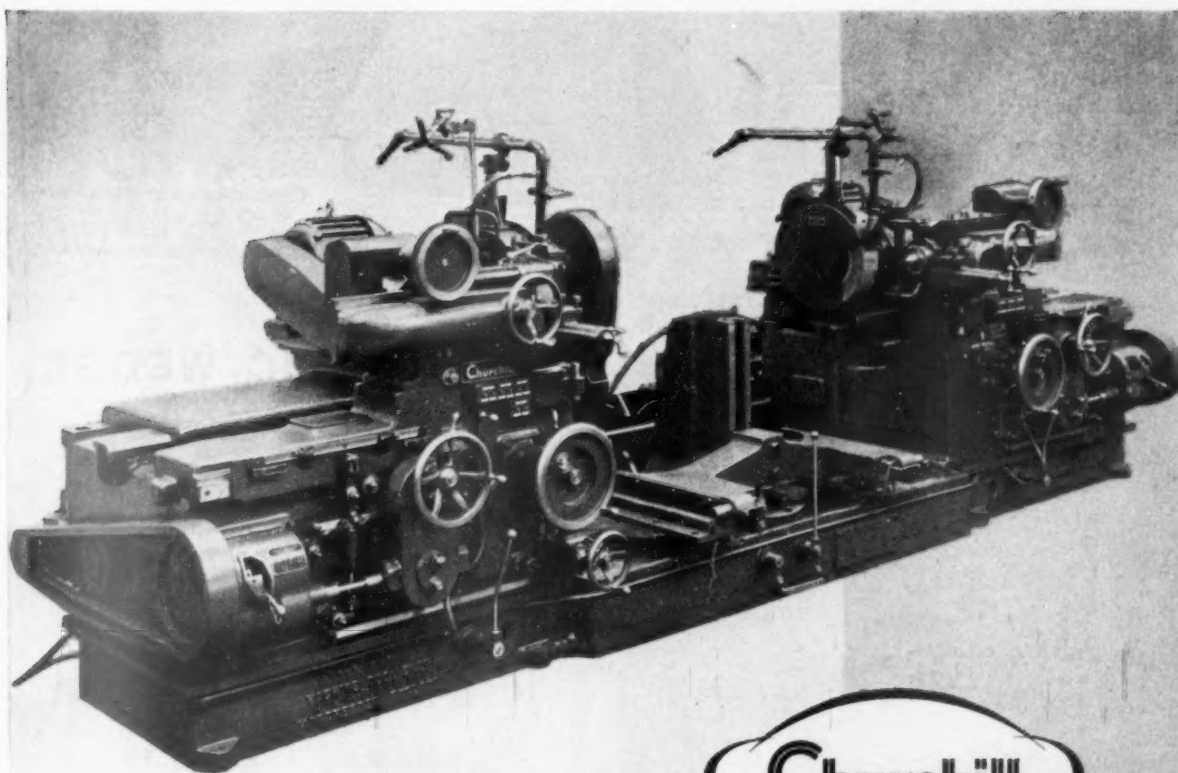


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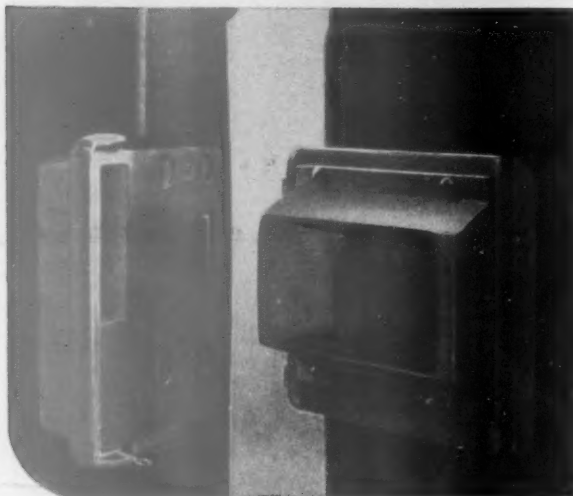
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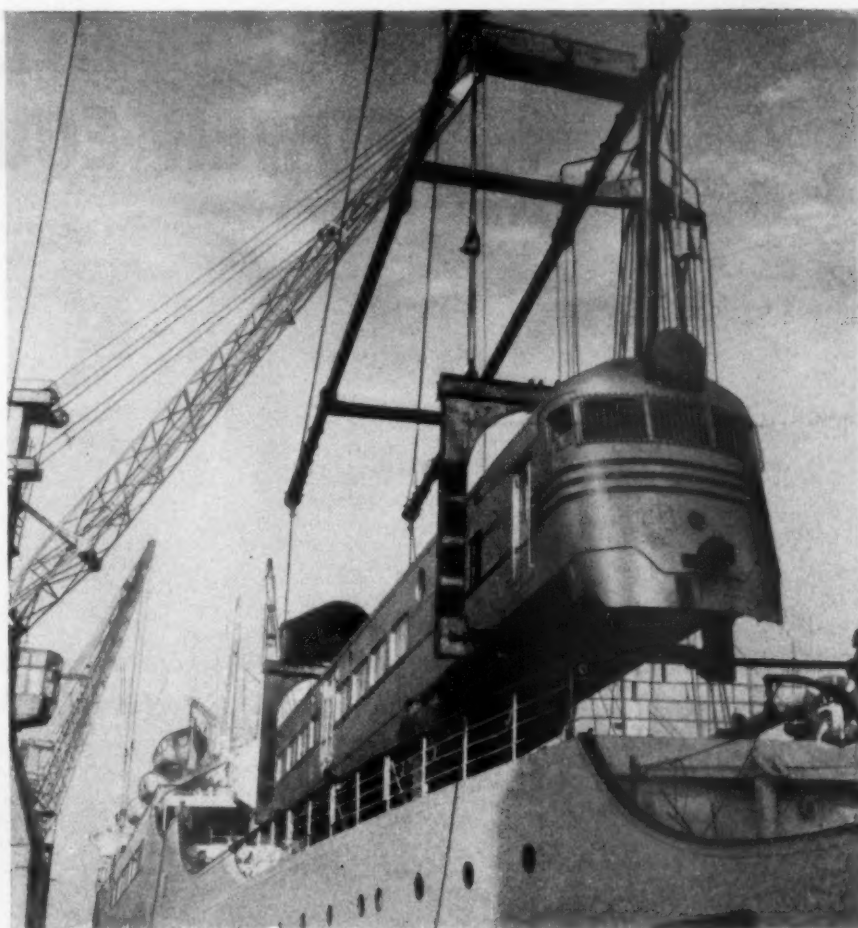
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A journal of Management, Engineering and Operation

VOL 114

FRIDAY MARCH 24 1961

No. 12

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 Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

## The reward of effort

THE announcement by the Minister of Transport just as we were closing for press last week that Dr. Richard Beeching, Technical Director of Imperial Chemical Industries Limited, is to be Chairman of the new British Railways Board and that he is taking over the chairmanship of the British Transport Commission on June 1, caused an uproar in the House of Commons and has aroused very mixed feelings on British Railways. Some of the implications of this appointment are dealt with editorially elsewhere in this issue. The resignation of Sir Brian Robertson, who is to receive, in addition to his superannuation award, a special payment of £12,500, is not unexpected in the circumstances, although, until quite recently, it had been assumed that he would continue in office until much nearer the time when the British Railways Board in effect replaces the Commission. During his period of office Sir Brian Robertson has had one of the most difficult tasks which have ever faced the chairman of a nationalised industry. That task has been made all the more burdensome by the vacillations of Government through the Ministry of Transport,

and it can probably be said that no man in such a position has received such frail support—other than verbal praise—at times when strength has been most essential to the successful conduct of the affairs with which he has been entrusted. There have been several occasions during his term of office when the Government of the day have failed to support Sir Brian Robertson and the Commission, and one can only regret that a position was not forced—as it could well have been—in which the accountability for the results could be demonstrated clearly to the public to lie with the Government. Probably Sir Brian Robertson's long military training was the cause of his refusal to force a crisis with those he considered to be in ultimate command, but there can be no doubt that his respect for them must have undergone almost unendurable strain. One can only hope that, coming from industry, Dr. Beeching will have fewer inhibitions.

## Stable government policy required

SPEAKING at the annual luncheon of the British Electrical & Allied Manufacturers' Association on March 16, Mr. Kenneth Allen, Chairman of B.E.A.M.A., said that only a stable Government policy could ensure the continued success in export markets of Britain's manufacturers of electrical goods. He pointed out that the electrical and allied industry produced an annual output worth £1,600 million. It had expanded faster than any other U.K. industry: since 1956, production had risen by over one-third, while the number of workers had increased by only 13 per cent. Shipments overseas now accounted for 10 per cent of Britain's total exports of manufactured goods. Large-scale investment was required to maintain this growth and vigour, and this was work which must be supported by large-scale production to keep down the price of equipment. Mr. Allen was sure the Government recognised that business could not be run at a loss. Nevertheless, he added that a stable home market could help to make prices competitive.

## Report of Committee on Rural Bus Services

THE report of the Committee on Rural Bus Services was published on March 15. The conclusion reached was that present and future levels of rural bus services were inadequate and the committee, with three of its 12 members dissenting, recommended a system of direct financial aid related to the circumstances in each case but not based on a "costs per vehicle mile" formula. This aid would come in part from local, and in part from central sources, and would be administered through County Councils. The dissenting members recommended a remission of fuel tax. The adoption of the majority recommendation should relieve the railways of the provision of alternative bus services to replace branch-line closures which, from a sense of public duty, they have undertaken. Subsidisation of road passenger transport by British Railways in the role of tax-payer and rate-payer and the subventions already in existence to encourage bus operators to take over uneconomic routes to replace branch-line services could mean that the railways will be paying the same bill twice.



### B.T.C. sends mechanical expert to Africa

MR. E. S. COX, Assistant Chief Mechanical Engineer of the British Transport Commission, who is a member of the Central Committee of U.I.C.'s Office of Research & Experiments and has already visited India, the U.S.A., and Russia in connection with mechanical engineering developments, left London for Johannesburg on March 18. He has begun a three-week tour of South Africa, Southern Rhodesia, and East Africa to lecture on British Railways' experience with diesel and electric traction. Mr. Cox has planned to attend the opening of the Rand Show, read a paper to South African engineers, and show some of the latest films on railway subjects made by the Commission's film unit. These include the excellent productions "Railway electrification at industrial frequency" and "Report on modernisation." Later he will give lectures and film shows in Southern Rhodesia and East Africa. He is scheduled to return to this country on April 11.

### L.A.M.A./C.O.I. exhibit at Rand Show

TRANSPORT is the theme of the exhibit in the United Kingdom pavilion at the 1961 Rand Show, to be held at Johannesburg, March 21/April 3. The Board of Trade has divided the exhibit into sections covering rail, road, sea and air. The responsibility for the Rail Transport Exhibit has been undertaken by the Locomotive & Allied Manufacturers' Association of Great Britain. The exhibit has been designed by the Central Office of Information in consultation with L.A.M.A. and an interesting range of rail-transport equipment, models, transparencies and photographs has been provided by members of L.A.M.A. There has also been ready collaboration from the British Transport Commission. The exhibits cover the general field of British locomotives, rolling stock and rail-traction equipment; manufacturers of signalling equipment have also contributed. The Chairman of L.A.M.A., Mr. G. Collingwood, Managing Director, the Vulcan Foundry Limited, is visiting South Africa during the period of the Rand Show.

### Southern extends car tourist train

THE success of the "rail lift" for motorists between London and South Devon has encouraged the Southern Region of British Railways to extend its car tourist train services between Surbiton and Okehampton to Fridays and Sundays—until now, the facility has been available on Saturdays only. Except for the first two or three weeks after its introduction last summer, the train—which carries motorist, his family, and his car—was completely booked up during its operation, and many advance bookings have been received. The train will run every Friday from July 21 to September 8; every Saturday from June 17 to September 16; and every Sunday from June 25 to September 10. It will make the journey in less than 4½ hr. and will have a restaurant car. All-in return fare for motorist and car is £15. Passengers pay £3, and there are reduced rates for children. On three "bargain days"—June 25, July 2, and July 9—the motorist gets a £2 10s. reduction.

### Good economic year forecast for S.A.R.

INDICATIONS are that 1961 will be the busiest year yet for South African Railways. It is expected that the system will be called on to move record quantities of maize and other agricultural products as well as unusually large tonnages of iron ore, manganese, chrome, and coal. Accordingly, railway revenue is rising, but at the same time a tight control is being kept on expenditure. As a result, the system is showing a net profit of nearly £8 million (R16 millions) for the first nine months of the current financial year, and is maintaining its average of nearly £1 million (R2 millions) a month profit. From April to December last year, railings of manganese ore increased from 312,000 tons to 710,000 tons compared with the same period

of the previous years; and of chrome ore, from 508,630 tons to 682,000 tons. Petrol and paraffin shipments rose by more than 3 million tons, and diesel oil reached a new record level of 123 million gal.

### Railway trends in Canada

AT THE end of 1959, a total of 44,209 first main track-miles were operated by railways in Canada. During the five-year period 1955-60, second main track-miles declined by 136 to 2,350, and industrial track was reduced 1,024 miles to 1,219. Yard tracks and sidings increased to 11,616 in 1959 from 11,142 in 1955, bringing the total mileage of all tracks to 59,394, a net gain of 79 miles. Freight vehicles at the end of 1959 numbered 194,512, showing a fall from 196,893 in 1958, but an improvement on the 1955 figure of 185,956. The average capacity of wagons has steadily increased over the five-year period. In keeping with the trend of rail passenger traffic, the number of passenger coaches in service at the year's end dropped to 5,456 from 5,733 a year earlier and 6,574 in 1955. At the close of the year 1,514 steam locomotives were in service, but complete dieselisation of most railways took place by the end of 1960.

### Materials handling

MATERIALS handling forms an important factor in the costs of most industries and is one upon which works efficiency is largely dependent. That wide recognition is given to its importance is proved by the number of registrations received for the Second International Conference on Materials Handling, organised by the Institute of Materials Handlings, to be held at Southport, May 10-12. The working sessions are divided into four groups, covering respectively Agriculture & Food Production, Extractive Mineral & Chemical Industries, and Heavy, and Light Industry. Four papers are to be read to each section and numerous visits have been arranged. Among the places included are British Railways Huskisson depot and the foundry at Horwich. A feature of the former is the handlings system, based on slat conveyors, for the sorting and forwarding of sundries traffic. At Horwich delegates will see two complete moulding plants, each comprising a continuous circuit, largely controlled from a central point.

### Pre-apprenticeship in North-Eastern Region

TO BE described in greater detail in a subsequent issue, the pre-apprenticeship training school scheduled for completion by the North Eastern Region of British Railways for the end of 1962 is a practical step toward the solution of a recurring modern problem. Its principal aims will be to introduce boys to the new conditions they must encounter on leaving the shelter of home and school, to show the necessity for adaptation and how this can be effected; to give training in manual skill; to find natural aptitude and—unfortunately again all too necessary in modern times—to widen general knowledge. Tuition will be both practical and theoretical: practical knowledge will be imparted by experienced railwaymen; theory will be given by lecturers provided in association with the local education authority. Boys will be encouraged to use the Works canteen: this excellent measure will enable them to meet their future colleagues and reduce any tendencies to "supergamesmanship."

### Mexican-produced concrete sleepers

IN MEXICO, and particularly in certain tropical and sub-tropical regions of that country, the service life of timber is comparatively short. Faced with a threatening shortage of home-grown timber, the Mexican Railways have, as part of their modernisation programme, turned to the use of concrete sleepers. The choice fell on the elastic type "RS" sleeper



developed in France. Comprising two concrete blocks linked by a steel bar, this sleeper is being used on a large scale; over eight million having been produced at 27 plants in 17 countries. According to a paper submitted by Mr. C. Lezama to the Second Inter-American Congress of the Building Industry, it has many advantages. Stated to be the only elastic type in existence, the sleeper keeps track in proper alignment during very long maintenance intervals, yet is said to be cheaper than any other variety of its type. It provides superior electric insulation, and corrosion of its steel members is easily prevented by inexpensive precautions. Damage caused by derailments is easily repaired. Two Mexican plants now produce a daily total of 2,500 of these sleepers.

### Railways in the new era

THE appointment of Dr. Richard Beeching, Technical Director of Imperial Chemical Industries Limited, as the first Chairman of the British Railways Board, his immediate appointment as a part-time Member of the British Transport Commission, and his succession to the chairmanship of the Commission on June 1 in place of Sir Brian Robertson, raises a number of considerations. Perhaps the first of these is the fact that the appointment is for five years, which in itself would not be significant, but it has been reported that Dr. Beeching intends to return to I.C.I. at the end of that period. Indeed, the appointment to the Railways Board has been referred to in the House of Commons as "an interruption" to his career. If this is so it suggests that Dr. Beeching's function will be specifically that of a technical administrative organiser, and that having completed his work he will hand over to a more permanent successor. Whether it is humanly possible, even for a man of Dr. Beeching's undoubted talents, to produce a paying railway structure within five years must remain to be seen.

There are many, both inside and outside the railway service, who feel strongly that a suitable man could have been found within the ranks of the railways themselves, and this view we share. The Government has decided otherwise. Once that decision is accepted it is only fair to say at once that from a purely administrative point of view, it would be very difficult to better Dr. Beeching's qualifications. He has had a wide and successful career within one of the greatest industrial organisations of our time. He is a relatively young man who has made his way rapidly, and undoubtedly he is a most able industrialist. Neither, in our view, is it reasonable to cavil at the salary—£24,000 a year—he is to receive. On the contrary, it is all to the good that at long last the Ministry has awakened to the need to pay reasonably well for jobs of this magnitude and for men of this calibre. There are very wide implications, both within and without the railways, of this salary level, but comparing like with like and allowing for differences in monetary value and the incidence of taxation, it is still below the amounts which were paid, for example, to the general managers of the pre-nationalisation railway companies.

Dr. Beeching, we feel sure, would be the last to claim intimate knowledge of railways or their problems. A nine-months apprenticeship with the Stedford Committee, in our judgment, is of practically no value in this direction. At the end of his five years he will probably know a little more, but, even in that time, his knowledge is likely to be more extensive than comprehensive. Presumably, railway knowledge in the Government's view is not essential at this stage and for this particular job.

Much will depend on the Chairman's selection of his lieutenants within the industry to deal with railway matters. There can be no doubt that one of his first tasks must be to endeavour to restore, and then to promote, the shattered morale of railway men of all grades, to which the present appointment in many ways has been the final blow, for it has demonstrated the Government's appraisal of the top people within the industry.

There is one point from which railwaymen may gain encouragement in the selection of a man of the stature of Dr. Beeching. Far too great a share of the decline in the prosperity and well-being of British Railways over recent years has been directly attributable to the interference and mismanagement of politicians. Justified increases in railway charges have been put aside by Ministers for purely political purposes.

For similar reasons the Commission has been forced to agree wage increases which could not be justified economically. With his wide experience of industry, and the assurance of his own position, he is not likely to tolerate intervention of this kind. He may even prove to be as intolerant of ineptitude above as below. Unless he is, his chances of making a success of his present appointment cannot be rated very highly. Much must depend on the powers which he is given—and which he accepts—and on the relative strength and personality displayed by Minister and Chairman.

He will need a great deal of support from the railway officers as a whole, and we have no doubt that he will receive this, once the initial disappointment that it has been deemed necessary to find a leader from outside the industry has worn off. The railway officers are a well-disciplined body and their traditions and allegiances above all are firmly focused in the well-being of the railways they serve. They will rally quickly and strongly to anyone who can assure them of uninterrupted freedom to pursue the technical development of the railways; above all, after their experience during the post-war years, they will value any indication that they are to be free from the constant interruption of plans and projects which have made it impossible to conduct their affairs with reasonable efficiency. Five years is not a long time in railway development, but it could, at least, be a great deal better than they have had since the British railways were nationalised in 1948.

### The Engineer in Society

THE Professional Engineer—His Employment and Development" was the subject of a conference, organised by the Engineers' Guild, held at the Connaught Rooms, in London, on March 22. Among the papers was one contributed by the Rt. Hon. The Viscount Chandos, P.C., D.S.O., M.C., President of the Locomotive & Allied Manufacturers' Association, and Chairman of Associated Electrical Industries Limited, who chose as his subject "The Engineer in Society." The engineer, Lord Chandos explained, is the aristocrat of the twentieth century. In the material field, and the emphasis is on the material field, he has both the training and the knowledge to engage in speculations about the material future of mankind, and also the means of bringing these speculations to life. The prospects of nuclear fusion have considerably lengthened, and it may well be the end of the century before we are able to harness this new source of power. Everyone believed that one day we shall succeed, and that success will be by the extension of nuclear physics from the point which it has reached today. The consequences of this break-through are almost beyond the imagination of even young men today, and still further from the imagination of those who were brought up in the age of steam.

Speculations about this source of power have been in our minds for three or four years, but it is only very lately that a whole new series of speculation have come to birth; they are speculations about space. Without wishing to plunge into the subject of whether it will be possible to discover the origin of life and of the cosmos, there are the more practical aspects of space satellites. Space satellites, Lord Chandos thought, will be turned into a useful means of communication across the world, again within the lifetime of the youngest engineers who are now at our universities, and perhaps even quicker than we now imagine. Coming to the material world, the engineer is indeed the aristocrat of the twentieth century, a phrase which has a sound foundation in reason.

Today the engineer, through complex processes and calculations, holds out to mankind in the material field a future in which the word starvation should become obsolete, in which the word under-developed would become an anachronism, in which the word unemployment will cease to be used, and in which the word leisure would be surely substituted. The material prosperity of mankind must depend to a certain extent upon a correlation of the wealth it can produce and the number of people born to enjoy it. One of the duties of aristocracy must be to devote a lot of thought to this, the most urgent problem of mankind, that is the most urgent problem if we are not going to use the means of modern science to destroy ourselves, and solve once for all the problem of over population.

Lord Chandos then turned aside to implore the engineering profession to devote a definite part of their time to the study of the English language, so that it may be possible for them to convey their thoughts to their fellow men. Only too often the learned professions—amongst whom engineers were included—use a vocabulary and syntax which enables them to withdraw, like the ancient alchemists, under a cloud of sulphurous smoke and hide their discoveries from the inquisitions of the outside world.

It was not suggested that on technical matters one had not got to use technical terms, but when imparting thoughts and using influence upon mankind, it was necessary to learn methods of expression which are beginning to be discarded. It is also necessary, if engineers were going to be an aristocracy, not to have to rely only upon translation to be in touch with the teeming thought of our modern world. Yet, today, for example, only seven people in every 3,000 who learn a foreign language in Great Britain are learning Russian.

Lord Chandos concluded that we cannot escape the fact that, with all our marvellous inventiveness, with all the progress of machines, with all the research and scholarship into our tangled and troubled history, in man's relation to man we can point to very little progress, and possibly even to retrogression. We have witnessed the breakdown of the League of Nations and the impotence of the United Nations; we see today a world torn by internal strife in Africa and Asia. We see the divisions of the world on both sides of the Iron Curtain, and our sons and their sons are now saying that they have been born into a world where their existence is far more precarious than has ever been known since the dawn of mankind. Are we not almost beginning to make life so wonderful that it is hardly worth living?

It would indeed be ironical if all the efforts of engineers led only to the grave and that they should end by creating the means of their own destruction and being themselves the authors of their own decease. Lord Chandos wished that he had faith in the progress of man, but found it difficult to believe that, in 1961, when mankind, who has become so ingenious, and who has to his credit so many startling discoveries should, at the end, be found so obdurately stupid. Today we stand convicted of only progressing quickly into things which do not matter and of standing still, and even retrogressing, into things which do.

### Cooling equipment on diesels

THE subject of cooling on diesel locomotives is a most important one, for upon the correct functioning of the cooling arrangements successful operation is largely dependent. Despite the importance of the subject, relatively little information has been published upon it; accordingly the paper "Cooling Equipment for Diesel Locomotives," presented to the Institution of Locomotive Engineers, in London, on March 21, is particularly opportune. The joint authors, Messrs. T. H. Rudge, A.M.I.Loco.E., and M. K. Forbes, M.A., A.M.I.Mech.E., outlined the aspects of heat transfer and the sources and levels of the heat to be dealt with. In a diesel engine operating at full-rated power about 20 to 30 per cent of the energy released in burning the fuel is transmitted to the water jacket, and about 3 to 5 per cent is absorbed by the

lubricating oil; slightly higher values sometimes obtain when pistons are oil-cooled. If the engine is pressure-charged and the charge air cooled, the heat extracted from the charge air normally amounts to above 8 to 10 per cent of the heat liberated in the combustion of the fuel.

The heat generated due to energy lost in the transmission of mechanical energy from the engine to the driving wheels varies considerably with the type of transmission, and the conditions of operation. In mechanical transmissions the losses are usually less than 5 per cent of the maximum rated power output of the engine, but in electrical transmissions this figure may rise to 25 per cent, and in hydraulic transmissions to 50 per cent. In mechanical and electrical systems these losses are normally passed, in the form of heat, directly to the atmosphere, but in a hydraulic transmission the heat generated must be dealt with separately by cooling the transmission oil either externally or within the transmission by circulating a coolant through the casing.

Although attempts have been made, on an experimental basis, to use direct air-cooling for charge air in pressure-charged, intercooled engines, the difficulties in the design of a suitably-compact form of heat-transfer surface, and of ducting fresh air to the charge-air cooler, have prevented the adoption of this system. At present charge air, when cooled, is cooled by water in an auxiliary circuit. Occasionally, when the boost pressure is high, jacket water is used as the charge air coolant, so eliminating the need for a separate water radiator. Three types of heat-transfer surface, suitable for cooling liquids by atmospheric air, are in general use for locomotive radiators. These are: (1) finned tubes, (2) radiator blocks with flat-sided tubes, in which the secondary surface takes the form of flat fins, usually dimpled, (3) radiator sections, which are, in effect, narrow blocks fitted with their own individual headers. Finned tubes are not as widely used as the other types of surface, largely because the relationship between their heat-transfer and air-pressure-loss characteristics is not particularly favourable.

Of the various constructions available for fans, one-piece cast-aluminium is the most popular. Fans up to approximately 6 ft. in dia. are used and tip speeds up to 20,000 ft. per minute are not uncommon. High quality is essential since the fan is inevitably subjected to accelerations from general locomotive movement. Electric and hydrostatic fan drives permit flexibility in the location of the fan and the space which might otherwise be occupied by a gearbox. Of the two, the hydrostatic drive is the more compact; it also gives stepless speed variation which the electric drive does not.

Attention to duct design can pay dividends in that any reduction of losses in the duct results directly in reduction of the power required by the fan to give the requisite flow of air through the radiator. Temperature control is important. In water-jacket and oil circuits it is normally the temperature of the hot fluid entering the cooling equipment which is controlled, since it is the maximum temperature in the circuit which is of more importance.

In many pressure-charged diesel engines the advantages of cooling the charge air are worth while. The ensuing reduction of thermal loadings on the engine and exhaust temperatures often enable the B.M.E.P., and thus the rated output, to be increased. It is not normally economical to cool the air to lower than 30 deg. F. above the temperature of the water supplied to the cooler; when this water is cooled in a separate circuit cooled by atmospheric air, this brings the economical limit to about 45 deg. F. above ambient air temperature.

It is unlikely that much reduction in size will be achieved in future by advances in the science of heat transfer and by improvements in design by themselves. The factor which is most likely to show the most significant reduction in size is the use of higher temperatures of the hot fluids, particularly the jacket water. In the reduction of weight more extensive use of aluminium will almost certainly play the major role, as techniques in the jointings of this material improve.

## Competitive freight operation

ADDRESSING the Railway Students' Association, London School of Economics and Political Science (University of London), on March 22, Mr. L. W. Ibbotson, M.B.E., A.M.Inst.T., Assistant General Manager, Western Region, British Railways, chose as his subject "Competitive Freight Operation, The Riddle of Reliability." The chair was taken by Mr. J. R. Hammond, M.B.E., B.Sc., M.I.C.E., General Manager, W.R. It is, Mr. Ibbotson pointed out, an axiom that the competitive struggle between rail and road centres on two fundamentals—rate and service. The most important variable cost factors in railway operations spring from speed and regularity. Ultimate speed of movement relates to the whole of the operation from the time that a consignment comes into the hands of the railway, until it is handed over to the consignee. The operation can be broken down into (1) Cartage and terminals; (2) Movement between terminals and main marshalling yards; (3) Trunk haul.

A cartage vehicle normally spends far more time standing than running, and the time at the station is quite as important as the time en route. A great deal has been done in recent years to speed up the turnaround at stations, but much remains to be done, especially in the case of full wagon loads.

Movement between terminals and main marshalling yards is usually the slowest and most expensive portion of the journey, so much so that in some cases the cost of this part of the operation exceeds that of the trunk haul. The best solution is to eliminate it altogether. This can be done by concentrating traffic at a central goods station, which can be worked in close association with a main marshalling yard. Incoming trains can detach traffic directly into the terminal yard and outgoing traffic can be picked up in the same way. The distribution to outlying places is done by road, which is normally less costly.

Most railway traffic is loaded and unloaded in private sidings and a rail movement to and from the main marshalling yard is inevitable. This trip working can either be booked, if it is sufficiently regular, or worked by "control orders" engines, which often involves the most uneconomical use of staff and equipment.

Although the speed at which the main-line train travels is of much greater importance than it is in local working, the benefit of speedy trunk hauls is lost when the wagon is not travelling at all. The number of trunk trains which can be run over the same route is limited by the traffic available, and a wait after marshalling is often inevitable in order to build up a proper train load. The average time so spent in main marshalling yards varies between seven and ten hours. It is important to keep the traffic out of intermediate marshalling yards by running through trains to the farthest possible marshalling yard. It usually pays to hold traffic up to 24 hours to do this, but this can sometimes be avoided by marshalling the trains in sections, so that they can detach and attach at intermediate yards en route, and still keep the long-distance traffic on the move.

Regularity is as important a cost factor as speed, there is, however, one important difference. Greater speed of operation usually depends on capital expenditure on such items as locomotives, marshalling yards, signalling and goods stations. Regularity, on the other hand, depends on none of these things. The factors of speed and regularity are basic to railway costs and upon them depend not only the rate but also the degree of reliability which can be offered to industry.

The railway should concentrate every effort to secure and recover to rail transport traffic which passes with regularity. Having decided the type of train for which regular flows of traffic are suitable, the train service needs examination to see how far it can do the job. In allocating the regular traffic to trains, every effort should be made to provide the greatest possible number of express trains. Not only are these trains by far the most economical to work but the required standard

of service cannot be given for individual wagons if slow trains are used.

There will always be a large volume of traffic which cannot be of a regular character. This traffic may be used to complete the loads of trains which cannot be wholly composed of regular traffic. It also provides the loading for other trains which must continue to be organised on a more flexible basis.

While it may not be easy to accomplish, forward control of train requirements is essential to the establishment of reliable transits. It will also lead to a reduction of train-working costs which will more than compensate for any additional expense which may be involved. Without some advance planning of this kind, diesel locomotives, which must be worked to much tighter diagrams than steam engines, will not be available for special working in the sense that it has been known in the past.

## International railway loans

THE International Bank for Reconstruction & Development has played a considerable part in the financing of railway developments in overseas territories. A supplement to the fifteenth annual report of the bank, which gives a summary of its activities between July 1, 1960, and January 31, 1961, recalls brief details of three loans made specifically for railway purposes. The largest of these, a \$70 million 20-year loan at an interest rate of 5½ per cent, was made on July 29 last year to India, and was the eighth to be made by the bank for the improvement and expansion of the Indian railways. In all \$328 million has been lent for this purpose, which is the largest amount the bank has made available anywhere for a single project. The loan covers the greater part of the foreign exchange required for the final year of the railway programme under India's second five-year plan, which is ending this month. The railways have been a central part of the plan, amounting to about one-third of all the public expenditures.

The Indian railway system, which is one of the largest in the world, consists of some 35,000 route miles and handles the bulk of long-distance freight and passenger traffic in India. The five-year programme has as its objective increasing freight carrying capacity from 114 million to 162 million tons a year, and raising passenger carrying capacity by about 15 per cent. The most important items in the programme were the acquisition of some 2,300 locomotives, 9,000 passenger vehicles, 112,500 wagons, the doubling of 1,300 miles of main-line track, the replacement of 8,000 miles of track, the construction of 830 miles of new lines, the electrification of 880 miles of main-line in high density traffic regions, the construction of bridges, and improvement in yards and signalling facilities. Most of the objectives are well on the way to realisation.

In Burma, the bank has made a loan of \$14 million for 16 years at 5½ per cent as from January 16 this year to the Union of Burma Railway Board. The loan will be used to finance the foreign exchange costs of a four-year programme being carried out by the Burma Railways to increase motive power, shorten the turn-around time of wagons, and increase passenger capacity. The Burma Railways consist of some 1,900 route miles, and a bank loan of \$5.35 million was made in May, 1956, to assist in the rehabilitation of the railways after the heavy damage which was suffered during the war and the period of emergency which ensued. The current programme provides for the acquisition of diesel-electric locomotives, diesel railcar, and railbus sets to accommodate suburban traffic in Rangoon and Mandalay, mechanical signalling and workshop equipment, as well as underframes for coaches and freight cars for which bodies are to be built locally. In addition, some sections of track are to be re-laid with heavier rail and bridges are to be strengthened to accommodate heavier and faster trains.

In Colombia, the Colombian National Railroad has secured a loan from the bank of \$5,400,000 for 15 years at 5½ per cent as from September 20 last year. The object of the loan is to



equip Colombia's new Atlantic Railroad, and to finance the purchase of 16 diesel locomotives, about 300 wagons, wagon parts, shop equipment and parts to be used in the repair of passenger coaches. The Atlantic Railroad, which is now nearing completion, will provide the first fast and reliable system of transport between Atlantic Ocean ports and central

Colombia, and, by connection with the existing railway system, with the Pacific coast. There have been two earlier bank loans totalling \$40.9 million, which have financed the Atlantic Railroad which involves 425 miles of construction, and the rehabilitation of a 60-mile section to the port city of Santa Marta.

## LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

### ALL-REGION TIMETABLE

March 14

SIR, The news of the forthcoming discontinuance of *Bradshaw* has come as sad tidings to all those of us who have enjoyed following vicarious journeys from Port Isaac Road to Salzcraggie Platform through its columns, punctuated en route by Q, aa and §.

But, in practical terms, the demise of *Bradshaw* does emphasise the lack of a convenient all-region time book. In France, the house of Chaix publishes the summary timetable known as the *Horaire Mayeux*, while the German Federal Railways produce the very compact *Reisefernfahrplan* containing all main-line services within the confines of a pocket-size booklet.

If reports are correct that British Railways intends to issue a similar all-region time book, let us hope that the result will be really compact—if so there should be a ready sale among businessmen, offices, and hotels for a simple and convenient guide to principal long-distance services which would slip easily into pocket or briefcase—something of the size of a slim paper-back novel, for example. A widely-used guide understandable by the public would soon pay for itself by the saving in the need for enquiry clerks.

As this timetable would be an entirely new publication there would be no inherited typographical lumber of footnotes and symbols, and this would be an opportunity to introduce the self-explanatory code of signs for customary facilities as used throughout the Continent, and to simplify and standardise other notes. Perhaps British Railways could even break down our native insularity so far as to print the introductory pages in one or two languages besides English.

Yours faithfully,

J. N. FAULKNER

53, Westfield Road,  
Surbiton, Surrey

### COMPARATIVE LOCOMOTIVE PERFORMANCES

March 7

SIR, Having very seriously studied the comparison between the engines of the S.N.C.F. and those of the C.F.F., I am able to give you the following information which is certainly of interest to your readers.

In your issue of February 10, 1961, you felt it necessary to stress the fact that the new "BoBo"-type electric locomotive on order for the Swiss Federal Railways will set a world record in locomotive power-weight ratios.

I beg to inform you that this is not so and that this record is still held by the French National Railways d.c.9200 "B.B." locomotive, which was first put in operation in May, 1957.

The fact is that this locomotive has an 1-hr. power of 5,570 ch. for a weight of 77 "metric tons," or 72.3 ch. per "metric ton," whereas the Swiss B.B. of exactly the same 1-hr. power (5,570 ch.) weighs 79 "metric tons," or 70.5 ch. per "metric ton." A comparison of the continuous rating of these two locomotives shows us that the difference is still in favour of the French "B.B."

Moreover, this can run at a speed of 160 km.p.h. (100 m.p.h.), whereas the S.F.R. (C.F.F.) locomotive will be able to run only at a speed of 140 km.p.h. (87 m.p.h.). The respective

characteristics of these two locomotives are given below.

	S.F.R. "BoBo" (C.F.F.)	F.N.R. "B.B." (S.N.C.F.)
Weight ... ..	79 t. *	77 t. *
1-hr. rating	14.6 t.	16 t.
Tractive effort ... ..	100 km./hr.	91.5 km./hr.
Speed ... ..	5,570 ch.	5,570 ch.
Power at motor shaft ... ..	70.5 ch./t.	72.3 ch./t.
Power/weight ... ..		
Continuous rating	11 t.	14.8 t.
Tractive effort ... ..	100.5 km./hr.	93 km./hr.
Speed ... ..	4,650 ch.	5,210 ch.
Power at motor shaft ... ..	59.8 ch./t.	67.9 ch./t.
Power/weight ... ..	6	10.2 t.
Tractive effort at 140 km./hr. ... ..		

\* All weight values are in "metric tons"

It should therefore be pointed out that the F.N.R. "B.B." locomotives were designed for a weight of 80 or 82 "metric tons."

I must add that the power of the 9,200 "B.B." locomotive is maintained at a very high value because of the "shunting" between 90 and 150 km/hr.

This is not the same case for an a.c. locomotive with commutator motor. The figures given for the tractive effort at the rim at a speed of 140 km./hr. are the clear proof of this fact.

Thus, the powers in function of weight (by "metric ton" of locomotive) are not expressive of the respective possibilities of the locomotives, and in fact, the tractive efforts at the rim for a same speed must be taken into account because they determine the dimensions of the traction motors.

Yours faithfully,

LEBERECHT FRICKE, DIPL-ING

Karlsruhe-Durlach, den  
Carl-Wesser-Strasse, 20

### MONEY AND ENERGY WASTED

17 March

SIR, I am frankly puzzled by Mr. Sydney's letter in your issue of March 3. Perhaps somebody would do me the kindness of telling me what a railway engineer like myself is really supposed to do? If we erect new equipment without a proper regard for amenities and appearance, we are denounced as vandals. If we take a little trouble to make the equipment look decent we are accused of wasting time and money. But perhaps I should accept the view of the great church dignitary who found comfort from the fact that being hit at from both sides helped him to maintain an upright position.

However, there is one point on which I should like to reassure your readers. In the difficult task of securing the best possible appearance in our overhead gear I have gladly availed myself of the advice offered by a designer experienced in this class of work. But at no time have I allowed him to hamper me, to cause delay, to depart from the most economical layout, or to increase the cost of the work. Even if I had wished to do so, the Commission would soon have stopped me.

Yours faithfully,

S. B. WARDER,  
Chief Electrical Engineer,  
British Railways Central Staff

British Transport Commission,  
222, Marylebone Road,  
London, N.W.1



# The Scrap Heap

## Almost a gentleman

The van driver who hit a signalman over the head with a glass ashtray, at Broadheath recently, relieved the signalman of the telephone he was holding before he did so. He was annoyed because the crossing gates were closed against him. The Chairman of the Magistrates Court said he might have caused a serious incident and fined him £25.

## Difficult

"Hereafter, when trains moving in an opposite direction are approaching each other on separate lines, guards and drivers will be required to bring their separate trains to a dead halt before the point of meeting and be very careful not to proceed until each train has passed the other."—From the official rules of the Cornwall Railway, circa 1873.

## Perseverance rewarded

A train spotter who had noted the number of all but one of British Railways locomotives during the past 30 years spent a couple of days at Birmingham just waiting and looking. His patience was eventually rewarded with No. 92155 the missing number to complete the set, which has cost him £6,000 in fares since he was ten years old. His reward? A ride on the footplate of a streamlined express.

## Inflated travelling caps

In the *Ladies' Pictorial* in 1886, Miss Emily Faithfull wrote of the patent travelling cap she had been shown. It had an air cushion at the back, which formed a pad when inflated, and "deadened all the unpleasant vibrations of the train." This headgear seems to have been for men only, as Miss Faithfull remarked that the "gentlemen . . . can repose in comfort in the travelling caps denied to ladies, who are compelled to remain bonneted, unless they are totally devoid of vanity and willing to make guys of themselves by wrapping their heads up in shawls."

## Like a bull?

Greater refinement appears to be required from British Railways at Twickenham. Mr. R. Gresham Cooke, local Conservative M.P., has asked the Minister of Transport to give a general direction to the British Transport Commission to cease using loudspeakers in suburban stations in residential districts. He had received "a good many" complaints about the speaker at Twickenham. On big Rugby match days "the bawl of the speaker tells Rugby fans to

hurry along when all of them are hurrying as fast as they can anyway."

## What the Dickens?

In 1832 William Strickland's proposals for a railway-canal linkage between Philadelphia and Pittsburg were implemented. Ten years later the route was described by Charles Dickens in his *American Notes*. Of the stretch between Hollidaysburg and Johnstown, he wrote: "On Sunday morning we arrived at the foot of the mountains, which is crossed by the railroad. There are 10 inclined

planes; five ascending, and five descending; the carriages are dragged up the former, and let slowly down the latter, by means of stationary engines; the comparatively level spaces between, being traversed sometimes by horse and sometimes by engine power, as the case demands. Occasionally the rails are laid upon the extreme verge of a giddy precipice; and looking from the carriage window, the traveller gazes sheer down, without a stone or scrap of fence between, into the mountain depths below."

## Analysis of the Situation—or Words before a flag at half-mast

To be, or not to be, that is the question:  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous policy  
Or to take arms against a shower of Ministers  
And by opposing end them: resign, and serve  
No more; and by resigning, to say we end  
The heart-ache, and the thousand natural shocks  
That flesh is heir to? 'tis a consummation  
Devoutly to be wish'd. Resign, or serve,  
Serve, perchance to dream? ay, there's the rub,  
For in that sleep of death, what dreams may come  
When we are shunted on a local line  
To give us pause. There's the respect  
That makes a mockery of experience:  
For who would bear the whips and scorns of those  
Who, seeking fault, would shatter just conceit;  
The price of diffidence, the Law's delay,  
The insolence of office, and the spurns  
That patent merit of the unworthy takes,  
When he himself his exeat might make,  
Through a White Paper? Who would burdens bear,  
To grunt and sweat under a weary life,  
But with the dread of something blacker yet—  
The undiscovered method, which could show  
No passenger returns, frustrate the will,  
And make us rather bear those ills we have,  
Than fly to others that we know not of.  
Thus conscience does make cowards of us all,  
And thus the native hue of resolution  
Is sicklied o'er, with the pale cast of thought,  
And enterprises of great pith and moment,  
With this regard their currents turn awry,  
And lose the name of action. Soft you now,  
my masters, for in thy provision  
Be all our hopes remember'd.

*Alarums and excursions off*

# OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

## ALASKA

### Outlay on improvements

During 1960, capital expenditure on improvements to the 530-mile Alaska Railroad totalled \$3,691,000. Similar expenditure for 1961 is budgeted at \$3,513,000, of which \$1,452,000 is for general equipment, including \$46,000 for road vehicles. Extended use of containers has made freight-rate increases unnecessary for the moment. Modernisation of track maintenance, better usage of the 57 diesel locomotives, and strengthening or replacement of bridges and culverts are the principal programmes under way, apart from the costing and extension of container and vanbox transport.

## CANADA

### Recent orders placed by railways

Recent orders placed by the Canadian Pacific Railway administration include 40 54-ft. piggy-back flat cars with the Canadian Car Company. The Canadian National Railway has ordered from the General Railway Signal Company equipment for 223 miles of K2-type c.t.c. for installation between Portage La Prairie, Manitoba, and Melville, Saskatwan. It

includes "Traffic Master" control with G.R.S. push-button operation in Winnipeg.

### New C.N.R. fast freight service

The Canadian National Railway has introduced a fast west-bound freight train service at passenger-train speeds. Known as the "Highballer," the new service will improve deliveries to the west by as much as 24 hr.

## CHILE

### Ten-year development plan

Under an extensive 10-year plan for national development in Chile, proposed investment in transport includes 38,100,000 escudos for airports, 498 million escudos for roads, 300,200,000 escudos for the State Railways, 44,800,000 escudos for ports, 95,200,000 escudos for the merchant fleet, 13½ million escudos for the National Air Line, and 399,200,000 escudos for motor vehicles.

## ARGENTINA

### Houses for railwaymen

The Union Ferroviaria is studying creation of regional housing schemes on

a co-operative basis. This would enable railwaymen to obtain living accommodation with an initial outlay of 15,000 pesos and a monthly contribution of roughly 1,000 pesos. The scheme would be financed partly by the union and partly by Government loans.

## DENMARK

### Private railways into joint ownership

Two of the largest private railways in Denmark are going under joint ownership this summer. They are the Hillerød-Frederiksværk-Hundested railway and the Gribskovbanen, which operates the Hillerød - Kagerup - Gilleleje and Kagerup - Tisvildeleje lines. Both railways have flourishing summer holiday traffics. The 24-mile H.F.H.R. serves Frederiksværk steelworks and is also part-owner of the steamship company operating from Hunsted to Grenå in Jutland.

## EIRE

### Delivery of diesel-electric locomotives

Delivery has been taken by Coras Iompair Eireann of 15 diesel-electric locomotives ordered from the General Motors Company of America, and the new equipment is being prepared for service. Six have already undergone their acceptance tests and have made their debut on passenger and mail trains on the Dublin-Galway, Dublin-Daldalk, and Dublin-Sligo routes. By the end of this year, 92 per cent of all C.I.E. trains, both passenger and goods, are scheduled for dieselisation.

## GHANA

### Diesel railway workshop opened

The Ghana Minister of Transport & Communications recently opened a new £G.65,000 diesel workshop at Sekondi railway yard. The workshop will undertake repairs and maintenance of railway diesel engines. There are now 59 diesel-electric locomotives, and eight diesel-hydraulic locomotives in use on Ghana Railways & Harbours. New passenger coaches, sleeping cars and brake vans have been ordered and are expected to be delivered this year.

### ROYAL VISIT TO MADRAS



[Photo]

[V. Dilli Baboo]

*Her Majesty the Queen at the ladies' reception at the Integral Coach Factory at Madras (see page 319 in last week's issue)*

## MECHANISATION OF PERMANENT-WAY WORKS in the North Eastern Region

An outline of the track devices developed to deal with the improvements demanded since 1955 by the modernisation plan

by A. C. LAYHE, Assistant (Mechanical Equipment), Chief Civil Engineer's Department, North Eastern Region, British Railways

THE method adopted to carry out permanent-way works is conditioned by the facts that work must be done during short intervals between trains or in limited periods when traffic is restricted or stopped, and that the land occupied by running lines generally is sufficient only to carry these lines and to give, at rail level, sufficient clearance for men to walk alongside the track clear of traffic.

Development of mechanical equipment is related to the following main considerations:—

- (i) Will the job standard be maintained or improved but done more economically?
- (ii) Will the introduction of plant reduce the period for which the track will not be available for traffic at full speed?
- (iii) Will the equipment make working safer and less arduous for the men involved?

The application of these principles has led to the acquisition of equipment as scheduled below. To ensure that individual works carry a fair apportionment of equipment provision costs, and that the overall economics arising from mechanisation justify the outlay and operational costs, plant usage charges are fixed and applied *pro rata* to the work on which it is used.

### Equipment control

In the North Eastern Region, with certain exceptions, the deployment of major items of plant to their whole programme of work is retained as a Regional Headquarters function. Minor items are allocated to the five civil engineering districts, where allocations of similar types of plant are held and controlled as to usage.

Equipment is allocated from annual co-ordinated works programmes, thus providing a basis on which to schedule essential maintenance and periodical overhauls in the Chief Civil Engineer's regional plant workshops by a specialist staff.

Apart from the use of smaller items of equipment such as power-driven rail sawing and drilling machines, mechanical hoes, power scythes, small portable riddling machines for ballast cleaning, and rail motor trolleys, the only major equipment used for track maintenance before 1940



Ballast cleaning machine

was the steam-powered rail travelling cranes, of 10- and 15-ton capacity and, in the early 1930s, the Morris track-layer. Little further mechanisation took place during the subsequent five years, and maintenance work continued to be done by traditional methods.

After 1945, changes began to take place and more track maintenance operations were mechanised. Electrically-powered hand tools were used for fettling track fastenings, power being supplied by generator units which could be man-handled along the cess.

### Ballast tamping

In 1947, a self-propelled mechanical ballast tamping machine was introduced. On this were mounted two mobile chassis, each carrying eight tamping tools which, when lowered in the ballast, were simultaneously drawn together by a screw drive and vibrated on an eccentric shaft, thus compacting the ballast under the sleepers.

This machine worked at approximately 100 yd. per hr., but the track had to be lifted ahead of the machine by up to 12 men using track jacks, and the tools could tamp to only 3 in. below sleeper bottom.

In 1950, a Swiss-built ballast cleaning machine was introduced. With this unit, it was possible to excavate the ballast below the sleeper bottoms over the full width of the ballast bed to a depth of 10 in. below sleeper bottom at approximately 100 yd. per hr.

To operate with the ballast cleaner, prototype "end-on" loading equipment was developed in 1953. It was commercially developed a year later. This system used a storage hopper which discharged in a dumper travelling along a train of drop-end wagons and enabled work to be done under single-line track occupation.

In the early 1950s, small portable air compressors were developed for use alongside the running lines. They powered pneumatic tools which were much lighter than the electric tools previously used, but, because of low output from the compressor unit, the number of tools which could be used at one time from a single machine was restricted.

For a long time track drainage had been carried out by hand largely because clearance difficulties made it impossible to use standard excavating machines. A certain amount of this type of excavation work was carried out using a crawler-





*Single-line tracklayer*

mounted trencher which, because of the narrow width across its tracks, could operate in quite restricted sites.

Experience gained from this type of equipment led to the development of a rail-mounted trenching machine.

#### Modernisation

In 1955, the year of the commencement of modernisation, it was apparent that much special equipment would be required to deal with the work to be done within the 15-year period envisaged for the modernisation programme. Much of this equipment was required specially for track works of various types, and it was at this time that the prototype "BR" type of ballast cleaning machine was put in service in the North Eastern Region. This is a more heavily-constructed type of machine than those used five years earlier. It is a diesel-electric unit comprising a power van

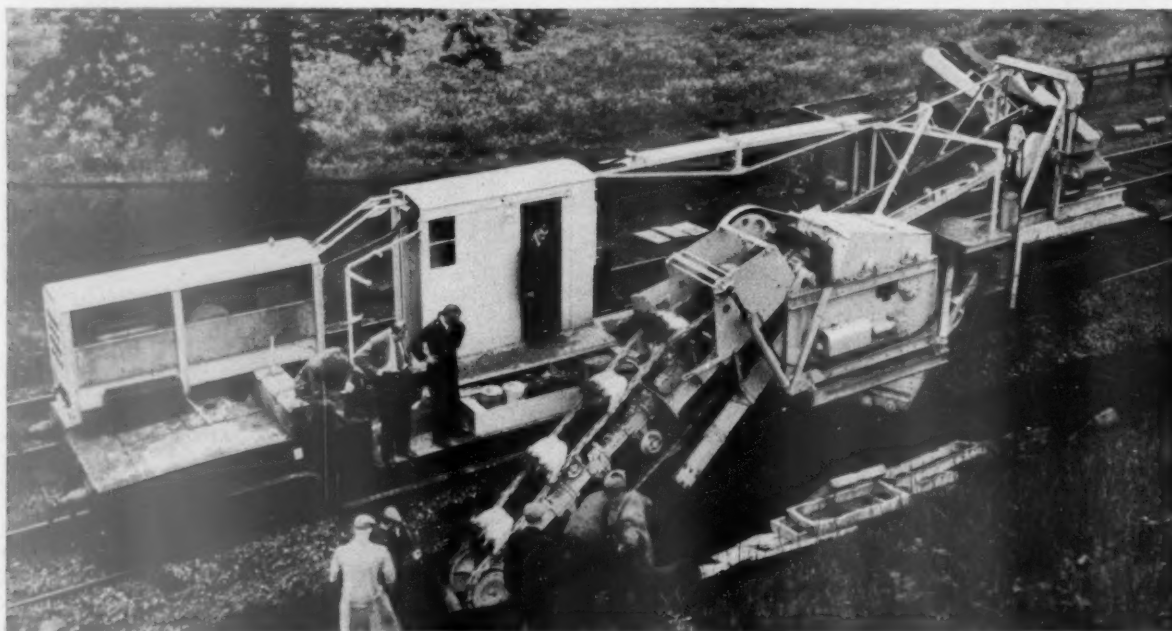
containing a 150-h.p. diesel engine driving a 100-kW. d.c. generator. It is a self-propelled four-wheel vehicle.

Coupled to the diesel-electric unit is the machine wagon, a 42-ft. long bogie-mounted unit carrying the excavating, screening, conveying and winching equipment. This machine weighs 55 tons and

is some 80 ft. in length. It is operated by a crew of three and excavates ballast over the full width of the bed to a depth of 12 in. below sleeper bottom at a speed of up to 150 yd. per hr.

Because it was envisaged that full use would have to be made of equipment which required only single-line occupation the Morris Tracklayer was rehabilitated and put in service in 1957. This machine, manned by a crew of five, re-lays track ahead of itself using a cantilever crane unit and requires possession of only the track on which it is standing. The old track is carried back and new track is fed forward by two powered train trolleys travelling along 11 specially-adapted track-carrying wagons.

One of the simplest units developed on the North Eastern Region at this time was the ballast drag. This is a simple skid plate to the underside of which are fitted scarifying teeth in chevron pattern. On its top side are narrow runner beams over which sleepers slide as the drag is towed under the track by a locomotive. With this unit one can



(Top): hydraulic lorry-mounted excavator; (bottom): hydraulic rail-mounted trenching machine

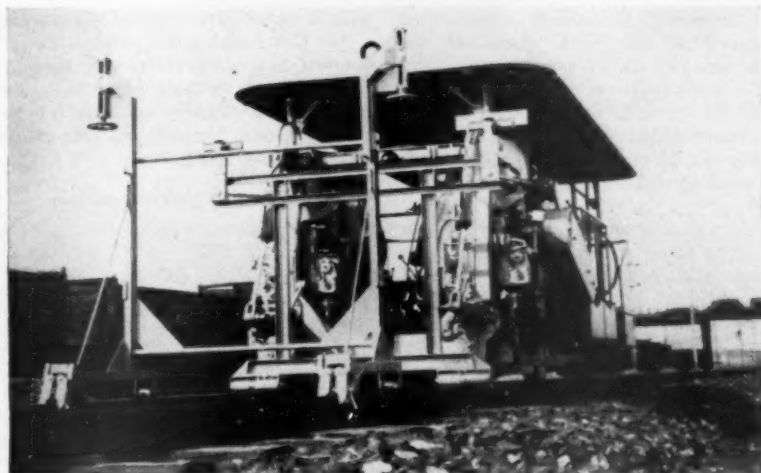


either simply scarify ballast under sleepers and give a small lift to the track or, by using newly-tipped ballast, lifts of up to 5 in. can be achieved at a speed of 3 to 4 m.p.h.

#### Excavating equipment

Before 1956, all major track excavation works were carried out by contractors' equipment located as near as possible to the area where the work had to be done. After that year the first pneumatic-tired lorry-mounted hydraulic excavator was introduced. This machine, of American manufacture, is fitted with a telescopic boom with a 12-ft. digging stroke, and operates a  $\frac{1}{2}$ -cu. yd. capacity excavating bucket. The boom can be rotated and has a reach of 29 ft., digs to a maximum depth of 12 ft. 6 in., slews through a full 360 deg., and discharges to a height of 15 ft. It has a digging capacity of up to 54 cu. yd. per hr., and can be fitted with some 20 attachments in place of the digging bucket.

A great advantage of this lorry-mounted machine is that it can quickly travel between sites and can traverse



*Hydraulic ballast-tamping machine with track lifting and levelling equipment*

railway tracks so simplifying the whole operation of getting the machine to and from a working site.

The seven machines now in service, in 250 machine-months, have worked 40,130

hr. and travelled 56,500 miles, thus giving almost 100 per cent usage.

#### Track drainage

During 1958, the Region put in service a rail-mounted trenching machine. This is also a completely new type of equipment. It is a hydraulically-operated machine mounted on a well wagon. The digging head is a larger version of the crawler-mounted type with which we had experimented in 1953. It can excavate at a distance of 10 ft. 6 in. from the centre of the track on which the machine wagon is standing and digs a 2-ft. wide trench to a depth of 6 ft. 6 in. below rail level.

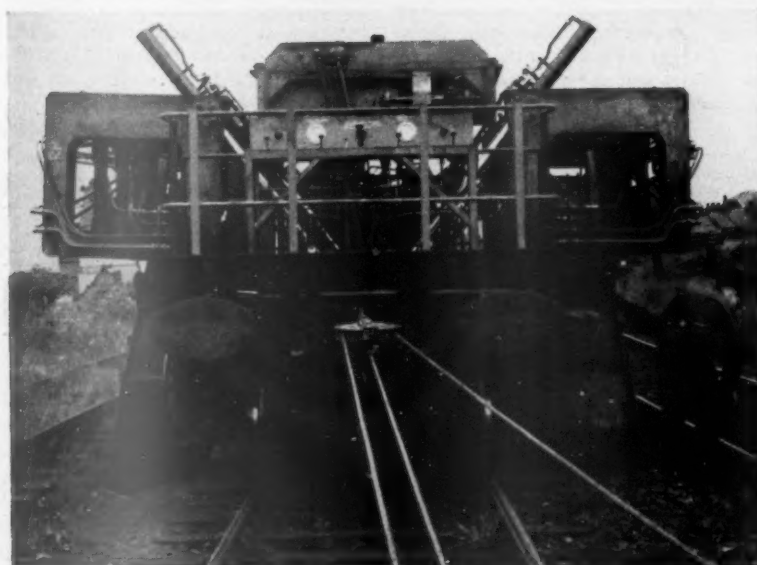
The average requirement is 7 ft. 6 in. from centre of track to centre of the drain and a depth of approximately 3 ft. 6 in. below rail level. In these conditions, the trencher can excavate at a maximum rate of approximately 180 yd. per hr.

Spoil from the trench is carried by transverse and longitudinal conveyors either to wagons on an adjoining line, or to a storage hopper on an improved form of end-on loading equipment. This equipment also is hydraulically operated, and the 5-cu. yd. capacity storage hopper is mounted in an engineer's grampus wagon. It is fitted with a hydraulically-operated sliding bottom door and fed by a hydraulically-driven conveyor. The hopper discharges in a hydraulically-driven dumper which travels along a train of 10 or 12 drop-end door engineer's grampus wagons.

The rate of progress under these "single-line" conditions is generally reduced to 40 or 50 yd. per hr. according to digging conditions and number of spoil wagons used.

In the field of on-track mechanical equipment, one of the biggest changes has taken place in machines for ballast tamping.

In 1954, the Region introduced the first mechanical tamping machine with



*(Top): track-recording trolley; (bottom): six-foot and shoulder ballast-cleaning machine conducting trials with digging heads before final development*

the tamping mechanism cantilevered forward of the front wheels of the machine. This meant that the track could be tamped right up to the jacks which held the track to its new level without any part of the weight of the machine being carried on untamped track. Rate of progress was improved by some 50 per cent.

Shortly afterwards, the all-hydraulic tamping machine was introduced. This machine adopted a different method of tamping from that formerly used. While earlier units operated on a mechanically-driven synchronised-tool basis, this machine operates on a non-synchronised hydraulic system. All movements are much faster and, toward the end of the 1950's, developments permitted track to be tamped at speeds up to 600 yd. per hr.

This vast increase on the tamping speed of necessity meant that much larger jacking gangs were required ahead of the tamping machine so that full advantage could be taken of the greater output from the machine. The need for such large jacking gangs was also the need for producing a mechanical means of lifting and levelling track ahead of the tamping machines, the ultimate requirement being for the tamping machine to have incorporated within itself the lifting and levelling equipment.

Such a machine has been produced and is now in service, enabling the complete operation of maintenance tamping to be carried out at speeds up to 350 yd. per hr. using only four men.

#### Track inspection

In 1957, the self-propelled track-recording trolley was introduced to provide a means of obtaining reliable records of cross level, track curvature, and track gauge at a running speed of 20 m.p.h.

The machine is manned by a crew of two, and two machines cover all the North Eastern main lines once every three months.

#### Weed-spraying train

Before 1959-60, it had been the practice in the North Eastern Region to hire from chemical weed-killer manufacturers a weed-spraying train, to carry out the major weed-killing programme work.

The development of different types of weed-killing chemicals produced the need for a train and equipment capable of spraying weed-killers some of which were soluble in water and some of which were insoluble in water and carried in suspension. The train had to be so designed that spraying could be satisfactorily carried out in the speed range from 0 to 30 m.p.h. and differential spraying undertaken.

Such equipment has been constructed in the North Eastern Regional plant workshops and put into service. Last autumn 350 miles of track were sprayed

with a maximum error of 1 per cent.

The train consists of two water tenders coupled to a coach converted to house pumping and spraying equipment, and messing and sleeping quarters for the crew of three. Normally 60 miles can be sprayed at one filling.

#### Marshalling yard construction

In marshalling yard construction, the Region is making extensive use of high-capacity lorry-mounted cranes for laying prefabricated plain line, switches, and crossings.

Using one crane, six men can lay 3,500 yd. of track in a 35-hr. working week.

A lightweight version of the new type of all-hydraulic track-lifting levelling and tamping machine will shortly be put in service in the new yards to carry out levelling and tamping. With this machine, it will be possible to lift new sidings through 6 in. to 8 in. of ballast and to level and pack to final level at speeds up to 200 yd. per hr. using only four men.

#### Smaller equipment

Because the use of power hand tools on track maintenance work produced such an increase in productivity, development of the "lineside" compressor was a constant pursuit. In 1955, the introduction of the rotary compressor resulted in a small unit with an output of 38 c.f.m. capable of being man-handled. Within a year, this had been superseded by a machine which weighed the same but gave a delivery of 72 c.f.m.

Mounted on rubber-tyred wheels, and operated along the cess or on a lightweight rail trolley, it deals with rail fastenings during the installation of long welded rails.

At the end of 1960, there were four major equipment developments under way on the North Eastern Region—the six-foot and shoulder ballast cleaning machine, the hydraulic cable duct

piling equipment, the rail-mounted trenching machine and the road-rail lorry.

The six-foot and shoulder ballast cleaning machine is an all-hydraulic unit, self-propelled at speeds up to 20 m.p.h. for travelling between sites and capable of excavating ballast over a width of 2 ft. in both the shoulder and six-foot to a depth of 10 in. below sleeper bottom, screening, and returning it to track at speeds up to 600 yd. an hr.

#### Pre-cast concrete piles

The cable duct piling machine is being constructed in the workshops of the Chief Civil Engineer, and is another rail-mounted unit, capable of handling and driving 18 to 20 pre-cast concrete piles an hour. These piles are driven alongside main lines to carry the 27 ft. 6 in. long pre-cast concrete cable ducts laid by mobile cranes from rail wagons to carry signal communications and signalling cables.

The rail-mounted trenching machine is a unit incorporating considerable improvements on the original machine referred to in this article. It will be completely hydraulically-operated and capable of excavating a 2-ft. wide trench to a depth of 6 ft. below rail level on each side of the wagon on which it is mounted, at a distance of 7 ft. 6 in. from centre of track to centre of either trench.

The road-rail lorry is a well vehicle with a carrying capacity of 8 tons capable of travelling at speeds up to 30 m.p.h. by rail or road. Fitted with a crane unit on the rear, it will be used for collection and distribution of material along the track.

#### Conclusion

It has been established in the North Eastern Region that a degree of mechanisation giving full usage or producing increases in productivity on restricted usage is economically justified and that the "unit cost" of carrying out work has been reduced.

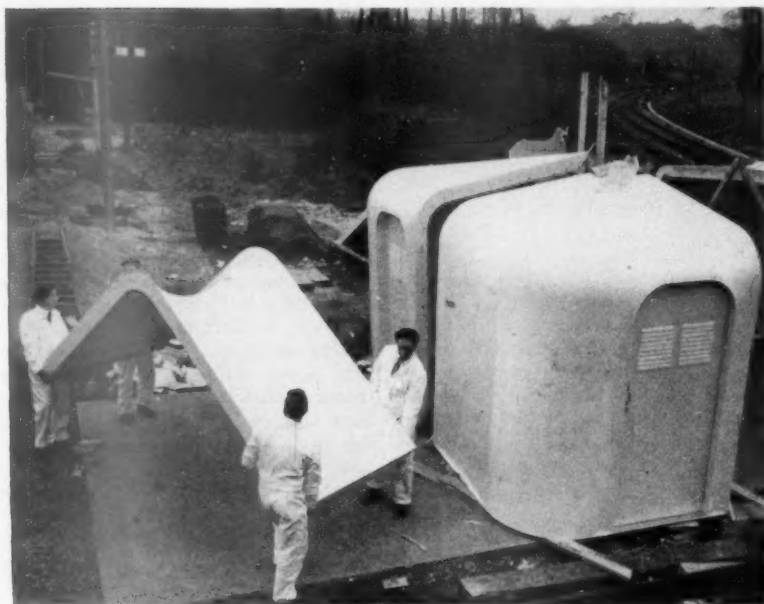
SCHEDULE OF MECHANICAL EQUIPMENT, PRIMARILY ALLOCATED TO PERMANENT-WAY WORKS

Work	Type of equipment	1945	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Earthworks including spoil disposal	3-½ cu. yd. crawler excavators	6	9	9	11	12	12	12	11	11	11	11	11
	½ cu. yd. lorry-mtd. excavators	—	—	—	—	—	—	—	4	5	6	8	8
	Crawler tractors: bulldozers...	—	—	2	3	4	5	6	8	8	8	8	8
Track drainage	Trenching excavator: crawler	—	—	—	—	1	1	1	1	1	1	1	1
	Trenching excavator: rail mounted	—	—	—	—	—	—	—	—	—	1	1	1
	Excavators: tractor mounted	—	—	—	—	—	—	—	—	1	1	2	3
Ballast maintenance...	Ballast cleaning machines	—	—	—	—	—	—	1	1	2	2	2	2
	Ballast tamping machines	—	—	—	—	—	7	14	14	19	19	21	23
	Tractors with scarifier	—	—	3	6	6	6	6	6	6	6	6	6
	Ballast drag ploughs	—	—	—	—	—	—	—	4	11	11	11	12
Track relaying	Rail-mounted cranes:	—	—	—	—	—	—	—	—	—	—	—	—
	Steam	21	21	21	21	21	21	19	19	19	19	17	17
	Diesel-mechanical	—	—	—	—	—	—	2	2	2	2	2	2
	Diesel-electric	—	—	—	—	—	—	2	2	2	3	5	9
	Track-re-laying machines:	—	—	—	—	—	—	—	—	—	—	—	—
	Morris	—	—	—	—	—	—	—	—	1	1	1	1
Track maintenance	Twin-Jib	—	—	—	1	1	1	1	1	1	1	1	1
	Compressors: lineside	—	—	1	1	1	3	3	13	13	22	26	28
	Generators	13	14	14	14	13	12	12	6	5	4	3	—
	Motored appliances *	30	76	119	130	149	158	171	207	211	212	215	230
Track inspection	Recording trollies	—	—	—	—	—	—	—	—	—	1	1	2

\* Includes auto-scythes, hoes, weed-spraying units, pumps, rail drills/saws, grinding units

## PLASTIC RELAY ROOM in the Eastern Region

Preparation for further electrification  
on the London Tilbury & Southend line



Exterior view of the relay room

THE first of its kind in this country, a signal relay room made of white plastic has been erected by the Eastern Region of British Railways in connection with the electrification of the Fenchurch Street-Shoeburyness line. Nearly 19 ft. long, 14 ft. wide, and 10 ft. high, the relay room houses electrical equipment associated with a nearby signalbox.

The new design meets the requirements of relay rooms serving automatic and semi-automatic signalling systems. Often erected on sites without easy access, these rooms must be capable of enlargement and periodic redecoration which might interfere with the efficiency of the equipment must be kept to a minimum. It was with these aims in view that the new prefabricated building system was designed and the prototype erected at Thames Haven Junction. It is hoped that prefabrication will give a consistent character and that the system may be extended to other lineside structures.

### Construction of unit

The buildings comprise three basic types of unit—a corner unit and side units of two different spans. The smallest building that can be erected is 14 ft. x 14 ft. The span can be increased to 18 ft. 9 in., 23 ft. 6 in. or 28 ft. The length may be increased as desired in increments of 4 ft. 9 in. There is provision

for doors and ventilators in all corner units. The smallest unit weighs 2 cwt., the largest 4 cwt.

A unit comprises wall and roof in one shell of double curvature designed to take advantage of the mechanical properties of plastic materials. The shell comprises:

1. An outer laminate of polyester reinforced with glass fibre about  $\frac{1}{8}$  in. thick with a smooth face from the mould.
2. A core of  $\frac{1}{2}$  in. thick phenolic foam. This ensures good thermal insulation and fire resistance.
3. An inner laminate of polyester reinforced with glass fibre about  $\frac{1}{8}$  in. thick, formulated to give a low surface flame spread, and faced with a surfacing mat.

### Unit erection

The unit is bolted together with stiffening flanges of solid polyester, which also carry the surface runs. The services installed are electric lighting, heating, and power and an automatic carbon-dioxide total flood fire-fighting system. Signal equipment is free-standing. The units are bolted down to an *in situ* concrete floor slab incorporating cable ducts.

The floor finish is p.v.c. sheet. Exterior and interior are finished white and no

painting or other decoration is required.

Design and manufacture of the moulds and prototype units has been a lengthy process, as this is the first use of plastics for building units of this size in Britain. The production of further units by the hand lay-up process would be rapid and the erection of a building of this kind on a prepared base could be completed in a few hours.

### Reason for development

Much of the rapid development of plastics in building has resulted from the large building programmes of organisations such as British Railways. The special requirements of their technical buildings have demanded an original approach for which conventional building techniques are not entirely satisfactory.

The building was designed by Mr. H. H. Powell, Regional Architect, under the general direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region. Assistance was also given by the Assistant Director of Research (Chemical Services) of the British Transport Commission. The signalling equipment will be installed under the direction of Mr. R. A. Green, Chief Signal & Telecommunications Engineer, Eastern Region.

The development contractor was Mickleover Transport Limited, Park Royal, London, N.W.10.

### INSTITUTE OF TRANSPORT VISIT TO BELGIUM

Arrangements are nearing completion for the visit of members and their ladies to Belgium which the Institute of Transport is planning for May 29 to June 7, 1961. The final booking form has been issued to members who had made provisional reservations. The return of the booking form is required by April 15.

### TWO NEW FILMS ABOUT LUBRICATION

The British Petroleum Co. Ltd. exhibited its two new films about lubrication on March 16. "The Hidden Power" illustrated the function of a lubricant to extract maximum power from plant under varying conditions of weather, heat, and humidity, and demonstrated research techniques used to determine the most efficient lubricant for a particular purpose. "Service to Industry" showed some aspects of the lubrication service provided by the company and included the examination of a sample of crankcase oil, taken from a diesel engine, in a spectrograph, to determine the presence of metal particles.



## TUNNEL DRIVING AND CONSTRUCTION using new shields and linings

London Transport experiments on the  
route of the proposed Victoria line

REFERENCE was made in our last issue (page 300) to the experimental tunnels, now being built by London Transport in the Finsbury Park area. These are on the alignment of the Victoria line and will be incorporated into it when construction of that line is authorised. Working sites and shafts have been established at the corner of Netherton Road and Seven Sisters Road (Tottenham) and in Finsbury Park itself. The Netherton Road shaft, 25 ft. in dia., is 60 ft. deep, will be a permanent one and will be used for ventilation and emergency stairs. From its foot an access tunnel communicates with the running tunnels, where chambers large enough to permit the assembly of the drum-digger rotary shields were excavated by pneumatic spades, and lined with bolted cast-iron segments. At this site spoil is brought to the surface by a crane which lifts the 1½-cu. yd. skips off the 2 ft.-gauge bogies hauled by battery locomotives. The skips are loaded by conveyor from the rotary cutters at the face, and are emptied on to the ground, the spoil being loaded into lorries by a 1-cu. yd. mobile shovel. An electrically-operated traverser is used to manoeuvre the skips at the bottom of the shaft.

At the Finsbury Park site the shaft is

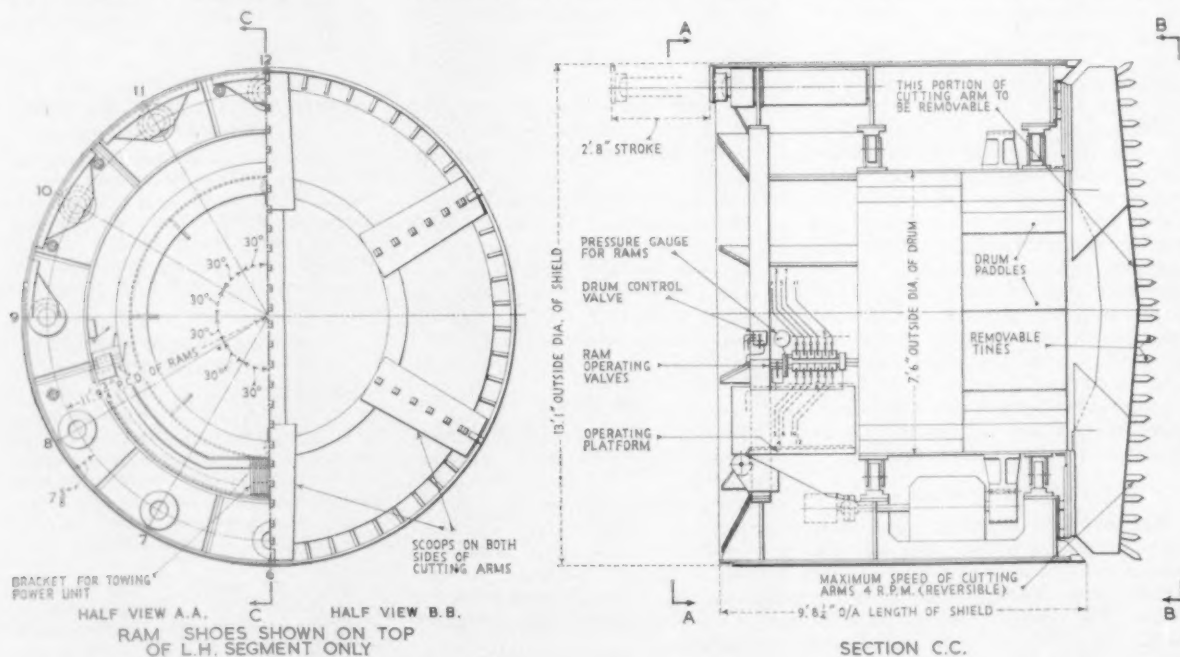
15 ft. in dia. and 60 ft. deep. Here also an access tunnel leads from the shaft foot to the running tunnels and there are two shield-assembly chambers. The running tunnels are on a gradient of 1 in 47 down, and the loaded ¾-cu. yd. skips are hauled by an electric winch sited in the shield-assembly chamber. The skips tip the spoil on to a belt conveyor in the access tunnel and the conveyor delivers the material to the foot of the shaft, where it is hoisted to the surface by a vertical bucket elevator. The buckets are warmed by hot air to prevent the clay from sticking to them. Originally the clay was carried to an elevated hopper under which lorries could be loaded, but it has now been found better to bring the spoil to ground level and use a 1-cu. yd. mobile shovel for loading.

### Drum-type shield

The drum-digger type shield, which was developed by Kinnear Moodie & Co. Ltd. and Arthur Foster Constructional Engineers Limited, has been used previously on tunnelling work for the Metropolitan Water Board's Thames to Lee Valley water tunnel. The drum digger consists essentially of two drums. That for the concrete-lined tunnels has

an outer drum of 14-ft. external diameter and 9 ft. in length and the leading end is bevelled to form a cutting edge. Within the main drum is a 7 ft. 6 in. dia. rotating drum, 5 ft. 6 in. in length, carried on two roller races and provided with a thrust ring to take the axial load from the rotating cutters. The cutting teeth are mounted on six arms, each carrying eight removable teeth. They are located at the outer edge of the inner rotating drum, so that they cut the area in front of the space between inner and outer drums. The area in front of the inner drum is cut by teeth mounted on a removable arm across the diameter of the inner drum. The teeth may be replaced after hand mining a small cavity in front of the arms. The inner drum, and the cutting teeth with it, can be turned at speeds of up to 4 r.p.m. by six hydraulic motors driving through gearboxes. Pinions at the driving ends of the gearboxes engage with a gear ring bolted to the rotating section of the drum digger.

The forward movement of the shield is imparted by 14 hydraulic rams equally spaced round the periphery of the shield and pushing against the last-completed tunnel ring. These rams, which have a stroke of 2 ft. 8 in., and operate at a working pressure of about 2,000 lb. sq. in.,



Drum-type digger shield



are individually controlled by an operator standing within the shield casing. The ram operator is provided with sighting guides which show whether the shield is on the correct alignment, and he can apply or reduce pressure to any of the rams to correct any deviation. The sighting devices used on the two shields differ, the more elaborate being arranged so that the ram operator can sight the image of a cross of light on a graduated mirror and obtain a direct indication of any deviation from true line or level.

#### Sighting device

The source of light is a lamp placed further back along the tunnel from which a beam passes through two cruciform slits in markers fixed to the tunnel roof, and placed precisely in the correct position by the use of surveying instruments. When driving a curved length of tunnel, the mirror sighting device is adjusted against a scale after each ring of lining is erected to keep the shield on the proper alignment.

The clay is cut by the rotating teeth and guided by scoops and paddles into a hopper within the shield where it drops on the end of a belt conveyor. This discharges on the main belt conveyor which carries the excavated clay along a staging, from which it is discharged in skips on each side of the horizontal conveyor.

Under the conveyor staging is a 200-h.p. electric motor driving pumps to provide hydraulic power for the shield motors. A separate 12½-h.p. motor supplies hydraulic power for the rams. At the sides of the conveyor belt, at the shield end, are electric hoists for



*Tunnel, with flexible-jointed cast-iron lining, on curve of 32-chains radius*

handling the tunnel lining segments.

To the rear of the conveyor the tracks on each side converge into one and pass down a short ramp to join the main tunnel track. The whole of this apparatus, from behind the shield to the rail ramp at the rear, is mounted on an articulated platform, attached to the rear of the shield and drawn forward as it advances. When the rams have pushed the shield forward the width of a ring of lining, they are retracted. A ring is then built in the space between the last completed ring and the rear of the shield. When this has been completed

the whole cycle re-commences, the rams pushing against the newly-installed ring.

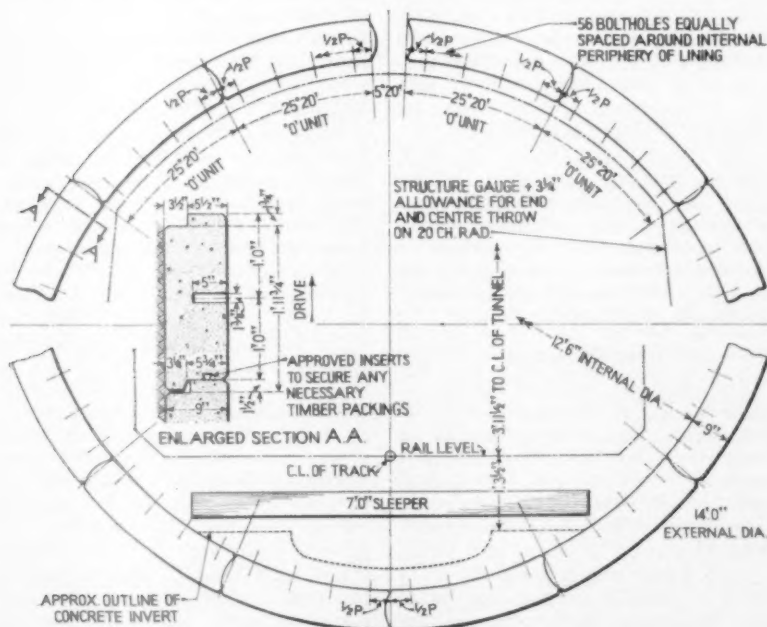
Considerable heat is generated at the working face and the oil in the hydraulic system is cooled by a heat exchanger. Cooling water is fed to the exchanger by piping from the shaft and on the return circuit is taken to the head of the shaft and passed through a cooler before being returned to the tunnel.

The drum digger is capable, in good conditions, of advancing more than 60 ft. a day, working three eight-hour shifts over long periods—a much higher speed than has ever been maintained before in building a tube railway tunnel. The maximum length driven to date in one 24-hr. period is 88 ft. Apart from the smaller external diameter of 13 ft. 1 in. the drum digger used for the cast-iron lined tunnels is similar.

#### Segment assembly

The lining of the tunnels, built from the Netherton Road site, is of unbolted flexible-jointed cast-iron segments.

These knuckle-jointed segments are inserted in the space left behind the shield when the rams are withdrawn, the two forming the invert being laid first, followed by the side segments. Finally, the segments forming the roof are man-handled into place and held by needles mounted at the rear of the shield. The two segments forming the floor of the tunnel are cast with small recesses at their upper ends and when all segments have been erected, hydraulic jacks are fitted in these recesses and a force of 15 tons per jack applied to the ring segments, expanding them against the clay outside. This expansion creates a small gap between the segments forming the sides and those forming the invert of the tunnel. In each of these gaps are placed



*Pre-cast concrete lining*



# PERSONAL

## British Transport Commission

DR. R. BEECHING, who has been appointed Chairman-designate of the Railways Board, is a Director of Imperial Chemical Industries Limited. He is also a Director of British Nylon Spinners Limited, and of



Dr. R. Beeching

I.C.I.'s Australian subsidiary company, Imperial Chemical Industries of Australia and New Zealand Limited. He was trained as a physicist at the Imperial College of Science, where he took a 1st Class Honours degree, and has had a varied experience in Government service and in industry. After a few years' postgraduate research, he was, for a short time, at the Fuel Research Station, Greenwich, and then joined the International Nickel Co. (Mond) Ltd. During the war he was loaned to the Ministry of Supply and worked at the Armaments Design Department, Fort Halstead. When the war finished he remained there for a time as Deputy Chief Engineer of Armaments Design, but left to join I.C.I. in 1948. After three years he became a member of the "Terylene" Council, which subsequently became the Board of I.C.I. Fibres Division. In 1953 he went to Canada, as a Vice-President of I.C.I. (Canada) Limited, to start the "Terylene" organisation there and to build a plant at Millhaven on the shore of Lake Ontario. After two years in Canada he returned home to be Chairman of I.C.I. Metals Division, and then, early in 1957, was appointed to the I.C.I. Board as Technical Director. For a time he also served as Development Director. He was a member of the Special Advisory Group, under the Chairmanship of Sir Ivan Stedeford, which was appointed last year by the Minister of Transport to examine the structure, finance and working of the British Transport Commission.

MR. H. J. T. PAIGE, Assistant Estate & Rating Surveyor (Scotland), British Transport Commission, has retired.

MR. A. S. E. BRADFIELD has been appointed Assistant to Estate & Rating Surveyor, Marylebone, British Railways, Eastern Region.

MR. N. W. WEBSTER, Chief Forwarding Clerk, Dewsbury, British Railways, North Eastern Region, has been appointed Goods Agent, Pontefract, Monthill.

MR. W. E. THOMSON, Traffic Costing Officer, London Division, London Midland Region, British Railways, has been appointed Assistant Divisional Traffic Manager, Barrow.

MR. E. MAIDEN, Assistant District Passenger Manager (Sales), Liverpool, British Railways, London Midland Region, has been appointed Assistant District Passenger Manager, Liverpool.

British Railways, Eastern Region, has announced the following appointments, which have resulted from reorganisation:—  
*Department of Line Traffic Manager (Great Northern) Kings Cross.*

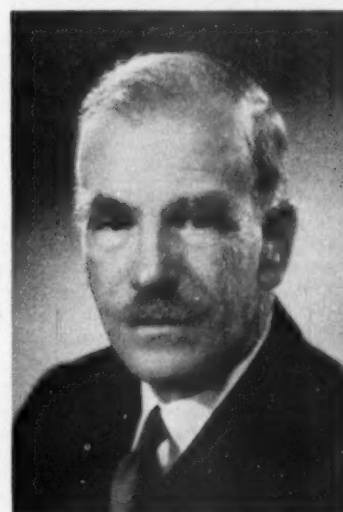
MR. C. G. PALMER, Motive Power Officer, to be Running & Maintenance Engineer; MR. J. L. SMITH, Motive Power Assistant, to be Running & Maintenance Assistant; MR. J. R. KING, Diesel Assistant, to be Traction Assistant.

*Department of Line Traffic Manager (Great Eastern), Liverpool Street.*

MR. C. SCUTT, Motive Power Assistant, Acting Motive Power Officer, to be Running & Maintenance Officer; MR. D. STOCKINGS to be Traction Assistant.

GENERAL SIR BRIAN ROBERTSON, BART., G.C.B., G.B.E., K.C.M.G., K.C.V.O., D.S.O., M.C., Chairman of the British Transport Commission, who is to retire on June 1, was born on July 22, 1896. From the Royal Military Academy he was commissioned in the Royal Engineers in November, 1914; a few months later he was serving on the Western Front. With one brief interval he continued on active service in France, Belgium and Italy until the Armistice, being awarded the D.S.O. and Military Cross and being three times mentioned in despatches. He was again mentioned in despatches and awarded a brevet as Major for his work in the Waziristan Expedition in 1922-23. After passing through the Staff College and making a prolonged tour of South America to study the military resources and organisation of that Continent, he retired from the Army in 1933 and settled in South Africa. Two years later he became Managing Director of Dunlop South Africa Limited. In the 1939-45 war he joined the Union Defence Force from the Reserve of Officers and went with the South Africans to the Middle East. Seconded from the South African

to the British Service, he was appointed Chief Administrative Officer to Field Marshal Lord Alexander, Commander-in-Chief, Italy. In 1945 he became Chief of Staff and Deputy Military Governor, British Zone, Control Commission of Germany. He was promoted Lt.-General, 1946, and General, 1947. In



Sir Brian Robertson

1947 he became Military Governor and Commander-in-Chief of the British Forces in Germany and in 1950, U.K. High Commissioner, Allied High Commission. The same year he was appointed Commander-in-Chief, Middle East Land Forces, and in March, 1953, he became Adjutant General to the Forces. Sir Brian became Chairman of the British Transport Commission in the summer of 1953.

## Continental Railways

MR. C. M. HANNOYER, General Representative of the French National Railway Company in the United Kingdom and Eire, and General Manager of French Railways Limited, London, who is relinquishing these positions to take up an appointment with the Northern Region of French Railways, was born in Paris in 1920. He was educated in Paris and between 1941-43 studied at the Ecole Polytechnique, where he obtained his engineering diploma. He joined the French National Railways in 1943 and was appointed to the Operating Department of the Northern Region. He subsequently held the following positions: Assistant Chief of the Operating Control Section, Paris District; Inspecteur Divisionnaire (Operating), first of the Paris District and later of the Lille District; Chief of the Operating Control Section, Lille District (1947-50); and Inspecteur Divisionnaire (Operating) of the Aulnoye District (1950-52). As Chief of the Operating Control





Mr. C. M. Hannoyer

Section of the Lille District he was responsible for the traffic to and from the port of Dunkirk, and in particular for that of the Dover-Dunkirk train ferry.

MR. J. L. DELACOUR, Assistant Divisional Operating Superintendent, Paris (S.W. Region), who has been appointed General Agent for French Railways in the United Kingdom & Eire, and General Manager of French Railways Limited, London, was educated in Beauvais and then in Paris, where he obtained his diploma as "Ingénieur Civil des Mines." Mr. Delacour joined French Railways in 1937 when he was appointed to the Operating Department of the "P.O. Midi" Railway (now the South-western Region of French Railways). He has been: Inspecteur in the South-Western Operating Division, Paris; Inspecteur (Operating), Millau District (Béziers Division); Inspecteur Divisionnaire, Traffic Headquarters, Paris; Inspecteur, Divisionnaire (Operating), South West Region; Chief of



Mr. J. L. Delacour

Operating Control Section, Paris District (South West Region), and Assistant Divisional Operating Superintendent, Toulouse (South West Region).

## Industrial

MR. J. O. BOVILL has been appointed Managing Director of Wolf Sales Pty. Limited, New South Wales, Australia.

MR. A. M. BROWNE has been elected President of the British Electrical and Allied Manufacturers' Association. MR. H. H. MULLENS was elected Deputy President.

MR. P. J. WRIGHT has joined the Marketing Division of Massey-Ferguson (United Kingdom) Limited, Coventry, as General Sales Manager.

MR. K. S. FLORY has been appointed Director of the Paint Manufacturers' Joint Executive Council, and will commence his duties on May 1.

MR. J. H. MUNNS has been appointed Area Sales Engineer, Aircraft-Marine Products (Great Britain) Limited, covering parts of Gloucestershire, Wiltshire, Hampshire, Somerset, Dorset, Devon and Cornwall.

MR. E. STOTT, Export Sales Manager, Turner Brothers Asbestos Co. Ltd., will retire on March 31. He will be succeeded by Mr. J. C. T. Fell, Export Sales Manager, Ferodo Limited.

MR. M. P. GAFFNEY has been appointed Commercial Manager, Telephone Manufacturing Company Limited to co-ordinate the commercial activities of all Divisions of the Company.

MR. J. VARLEY, Refinery Manager, and MR. G. H. PARR, Sales Manager, British Copper Refiners Limited, have been appointed Directors of British Insulated Callender's Cables Limited.

MR. L. H. E. JONES, Export Sales Manager, Expandite Limited, will leave London on April 2 for a tour of Canada, United States, Central and Southern America and the West Indies, visiting Engineers, Architects and Distributors in these territories.

MR. J. LEWIN, formerly a Senior Assistant Engineer with the Metropolitan Water Board, has been appointed Materials Handling Engineer, British Thermoplastic & Rubber Manufacturers Limited, responsible for the development of mechanical handling techniques.

Castrol Limited has announced that, on January 1, 1962, four Assistant Managing Directors will be appointed. They are: MR. J. A. V. WATSON, MR. L. G. PACKHAM, MR. C. E. R. MILLIDGE, and MR. A. A. BARR, all of whom are Directors of the Parent Company. These changes will follow the retirement, at the end of the year, of MR. W. F. LIST, Assistant Managing Director, who will remain on the board.

MR. H. DE GREY-WARTER, has joined Alenco Limited as Group Advertising and Publicity

Manager. The Alenco group consists of the British Ermeto Corporation Limited, Simplifix Couplings Limited, Kay and Co. (Engineers), Ltd., S. S. Stott Limited, and the Kent Nail Works Limited.

## Overseas

MR. J. C. KENKEL, European General Manager, Canadian National Railways, has been elected President of the Canadian Chamber of Commerce in Great Britain for 1961-62.

MR. J. BRADLEY, Chief Mechanical Engineer, Western Australia Government Railways has retired. He is succeeded by MR. S. GRIFFITHS.

MR. A. GILMORE, Secretary Victorian Government Railways, is retiring. He will be succeeded by MR. W. WALKER at present Acting Chairman of the Staff Board.

MR. J. A. O'CALLAGHAN, Comptroller of Stores, and MR. W. J. THORN, Assistant Transportation Superintendent, New Zealand Government Railways, have retired.

MR. HARRY ARKLE, European General Manager, Canadian Pacific Railway has been appointed a Director and additionally appointed to the new position of Managing Director, Europe.

## Life Peer

BARON MOLSON, of High Peak in the County of Derby, is the name, style, and title which has been gazetted for the life peerage conferred on Mr. A. E. H. Molson.

## Association of British Travel Agents

MR. C. GARSTANG, General Manager, Thos. Cook & Son Limited, has been re-elected Chairman of the Association of British Travel Agents for 1961-62. MR. R. R. MAY, Managing Director, Poly Travel Limited, has been re-elected Vice-Chairman of the Association, and MR. G. W. E. FORTUNE will continue as Hon. Treasurer.

## British Standards Institution

The British Standards Institution has announced the appointment of Chairmen to three Industry Standards Committees. They are: SIR ANTHONY BOWLBY, Surface Coatings, other than paints; SIR BEN LOCK-SPEISER, Nuclear Energy, and MR. W. NEWTON DAWSON, Wool.

## Ministry of Transport

MR. W. P. JAMES, Chairman of Traffic Commissioners & Licensing Authority for the West Midland Traffic Area has retired. He is succeeded by MR. J. ELSE.



# NEW EQUIPMENT *and Processes*



## MOBILE RADIOTELEPHONE

The Pye PTC2007 Transistor Ranger is an amplitude-modulated mobile radiotelephone which, being compact and robustly constructed, is particularly suited for application to transport.

Models can be supplied for operation on fixed frequencies in the 25 to 174 Mc/s. range with channel spacings of 20, 50 or 100 kc/s, using either single or two frequencies simplex working. Versions with up to six switch-selected channels are available if required.

A high-efficiency transistor power-supply unit provides h.t. for both receiver and transmitter and is said to be characterised by an extremely long life and the reduction of mechanical noise. A heat sink provides cooling for the power supply transistors. Provision is made to adjust the equipment to correspond with the positive or negative ground of a vehicle wiring system. Further economy is effected by the inclusion of the "Receive Only" facility, which is provided to conserve l.t. current when the receiver only is in operation over long periods.

The receiver uses a single superheterodyne circuit in the 25 to 68 Mc/s. band and a double superheterodyne circuit in the 68 to 174 Mc/s band. Careful design, the use of a crystal-controlled oscillator, and highly stable i.f. stages, ensure reliable reception under the most arduous operating conditions. An efficient noise limiter is incorporated in both versions, ensuring satisfactory reception under conditions of high extraneous impulse interference.

The transmitter output power of five watts gives adequate range for most urban and rural mobile systems. Where longer ranges are required, the PTC 2207 model, with an output of 20 watts, is recommended by the maker.

The equipment is supplied with an adjustable cradle for mounting, a coaxial feeder cable, and quarter-wave whip antenna and base. For units operating between 25 Mc/s and 68 Mc/s a special strong whip antenna with a heavy-duty spring base is provided.

This radiotelephone has been designed to meet all relevant national and international specifications.

Fuller information is obtainable from Pye Telecommunications Limited, Newmarket Road, Cambridge.

## POINT PLOTTER

A point plotter has been added to the range of data-plotting equipment manufactured by Bryans Aeroequipment Limited. It is a compact keyboard instrument for desk or bench use. Mounted on the sloping top are the "X" and "Y" numerical keys, each axis being provided with four decades of keys, and positive and negative keys, to facilitate plotting graphs which appear in more than one quadrant.

Alternatively, the plotter can be used as a decade d.c. voltage generator, where frequent, quick, and accurate changes of voltage and polarity are required.

Additional information is available from the manufacturer, Bryans Aeroequipment Limited, 1 & 15, Willow Lane, Mitcham, Surrey.

## VALVE VOLTMETER

A portable valve voltmeter is announced. Known as Model "172A," this voltmeter is reported to have a very high input impedance of 11 megohms on all d.c. volt ranges, and 830 k to 1.5 megohms on a.c. volt ranges. This negligible loading on the circuit under test is claimed to enable the instrument to be

used in circuits where a normal multi-range instrument would be inadequate. The instrument is said to be completely stable after a short initial warming-up period, and to be unaffected by mains fluctuations or long periods of continuous use.

The weight is 5½ lb. and the outside dimensions 7½ in. x 6½ in. x 4½ in. Measurements are recorded on a 5-in. scale, calibrated in three colours. Nine separate arcs are provided including ohms, r.m.s., d.c., and peak-to-peak calibrations.

Operation is from an a.c. supply between 110 and 240-V, 40-60 cycles. Protection is provided against overloads or short circuits. Accessories are available which enable this instrument to be used at frequencies of over 200 megacycles and voltages up to 30kV.

Additional particulars are available from the manufacturer, Taylor Electrical Instruments Limited, Montrose Avenue, Slough.

## MOBILE CRANES

Two new mobile cranes have been added to the range made by Ransomes & Rapier Limited.

The "511" gives all-round outreaches. It may be fitted with cantilever jibs up to 40 ft. long and strut jibs up to 60 ft. Loads of up to six tons may be worked free-on-wheels. The turning circle has a radius of 21 ft.

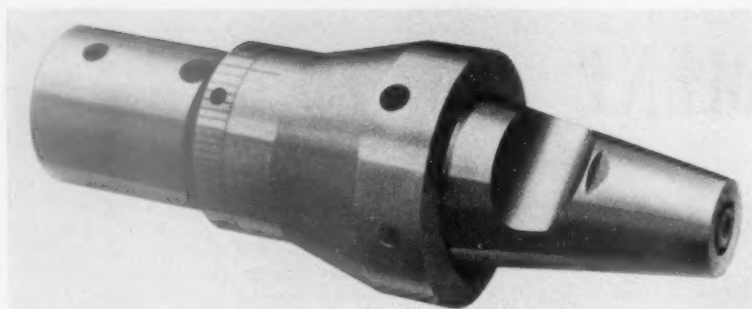
In the case of the "1520" model, loads up to 15 tons may be handled, and lengths may be up to 50 ft. for cantilever jibs and 80 ft. in the case of strut jibs. The radius of the turning circle is 21 ft. 6 in.

Additional information may be obtained from NCK Rapier Limited, 32 Victoria Street, London, S.W.1.

## MAN-COOLER FANS

A new line of transportable man-cooler fans is primarily designed to provide immediate relief to operators working in foundries or in close proximity to furnaces and steam-raising plants. Highly mobile, the units can be quickly positioned. They are fitted with high-efficiency axial-flow impellers of cast aluminium alloy and are powered by totally-enclosed motors to B.S.S. Aperture diameters of 22 in. and 18 in. are available both tripod- and cradle-mounted to suit particular requirement.

Further details can be obtained from W. G. Cannon & Sons Ltd., 38a, St. George's Drive, London, S.W.1.



### BORING HEAD

The "Briney" boring head has been produced for use on production fine-boring machines where tolerances have to be held to within plus or minus .0001 in. It can handle bore diameters from 3/32 in. upwards.

A feature is the method of controlling the boring size, which is done by rotating the adjusting bush; as the graduations, of .0002 in., are spaced at intervals of at least 1/8 in., fine adjustment is easily effected.

Capacity is not limited to one tool bit; a head is available which allows boring, turning, facing, and chamfering to be carried out in one operation.

Additional details are obtainable from Precision Gear Machines & Tools Limited, Red Ring Works, Bodmin Road, Coventry.

### POLYPROPYLENE PLASTIC

Propathene is a brand of polypropylene plastic, manufactured by Imperial Chemical Industries, which is now in bulk production.

Outstanding features claimed for this material include lightness in weight, high melting point, high degree of rigidity over a wide range of temperature, low moisture absorption, resistance to oils and greases, good dielectric properties, and suitability for moulding and extruding.

The material is suitable for a wide field of applications. They include insulation for the electrical and cable industries, valves and closures for chemical plant, piping for hot and cold water systems, domestic table-ware and a variety of plastic fibre products.

Further details may be obtained from Imperial Chemical Industries Limited, Imperial Chemical House, Millbank, London, S.W.1.

### ELECTRODE FOR MILD STEEL

The "Gazelle" is a Class "E.217" mild-steel welding electrode, developed to obtain smooth and speedy welding; features are high-travel speeds, longer runs per electrode, and a combination of high-quality welds with maximum ease of operation.

Of the non iron-powder, contact type,

the "Gazelle" can operate satisfactorily over very wide current ranges; for example, the current range for a 4-gauge is 190-350A.

Operation is similar to that of iron-powder contact type electrodes, with an added advantage of negligible spatter, and de-slagging properties are unequalled in the Class "2" range.

Further details can be obtained from the Transformer Division of A.E.I. (Manchester) Ltd., Moseley Park Works, Trafford Park, Manchester 17.

### SHAFT SEALS

Crane mechanical shaft seals are mass-produced precision units introduced in two forms, Types "106" and "106A". The basic difference between the two is that the type 106 is shaft-mounted and rotates with the shaft, while the Type "106A" is designed for press-in mounting, the seal remaining stationary and not in contact with the shaft.

Applications for which the former type is suitable include fuel-oil, hydraulic, and other positive displacement pumps, well-jet pumps, refrigeration compressors, and small centrifugal water pumps. The Type "106A" seal was first designed for motor-car water pumps, but its application has now been extended to a wide range of domestic appliances using mechanical shaft seals.

In the Type "106" seal, contact between the sealing faces is maintained by spring pressure, and synthetic rubber bellows are incorporated to give flexibility. A synthetic rubber drive ring grips the shaft and imparts, through a driving sleeve, a positive drive to the seal. The design of the Type "106A" seal is generally similar to the Type "106," but, instead of the drive components, a metal retainer is provided to allow the entire assembly to be press-fitted into a recess in the metal structure of the machine. The precision-lapped sealing face seals by contact with a rotating part of the machine, or through a floating seat mounted and rotating on the shaft.

Maximum shaft speeds for which the seals are suitable are 3,000 r.p.m. for Type "106," and 5,000 r.p.m. for Type "106A."

Type "106" seals are available for shaft sizes ranging from 1/2 in. to 1 in.,

while Type "106A" seals are supplied in the range 3/8 in. to 1 1/2 in.

Both seals are designed for service at pressures up to 75 lb. per sq. in., and at temperatures up to 100 deg. C.

Further details may be obtained from Crane Packing Limited, Slough, Bucks.

### SUMP PUMP

New sump pumps have been introduced by Worthington-Simpson Limited, designed for duties covering capacities up to 330 g.p.m. and heads up to 210 ft., depending on capacity. These units, intended to operate in sumps up to 10 ft. deep, are driven by a motor of up to 10 h.p. coupled to a pump end from the maker's existing "D" ranges.

A feature of the design is the fixture of the delivery pipe through the sole plate; this neat arrangement facilitates installation, while preventing strain on the pump delivery.

The pumps will handle a wide variety of acids, alkalis and slurries. Certain pumps are also designed to deal with liquids containing solids up to 1/2 in. dia., and viscous as well as clear liquids.

Additional particulars are obtainable from Worthington - Simpson Limited, Newark, Notts.

### LABORATORY FURNACES

Precision laboratory furnaces, which are reported to have exceptionally high stability of temperature, have been introduced by Shandon Scientific Company. Seven standard models are available, covering temperature ranges from 1050 deg. C. to 1500 deg. C. Operation is by a.c. current at 115 or 220 V.

Control may be by thermostatic regulator, or by chronograph drum for thermal cycling, these arrangements being easily interchangeable by the user.

All models can be mounted vertically or horizontally, and may be water-jacketed if required. Prices are from £95. Full particulars can be obtained from the manufacturer at 6, Cromwell Place, London, S.W.7.

### HIGH-PRESSURE HOSE

A new range of nylon "Fullway" high-pressure hose, which is claimed to be light, strong, durable, and to have excellent chemical-resistant properties, has been introduced by Tecalemit. The bore sizes range from 3/8-1 in.

Re-usable end-fittings have been produced for use with this hose; a feature of these fittings is that the minimum internal diameter is little less than the nominal bore of the hose. This assures a good rate of flow or, conversely, it is said to result in a more compact installation for any given flow-rate.

Further particulars are obtainable from Tecalemit Limited, Plymouth, Devon.

## PARLIAMENTARY NOTES

## British Transport Commission reorganisation

## Retirement of Sir Brian Robertson and appointment of Dr. R. Beeching

The Minister of Transport, Mr. Ernest Marples, on March 15, made a statement on the initial steps the Government proposed to take in the reorganisation of the British Transport Commission, under the proposals recently approved by the House.

He said that Sir Brian Robertson would retire from the chairmanship of the Commission with effect from June 1, 1961, he expressed the Government's warm gratitude to Sir Brian Robertson for his outstanding services as Chairman of the Commission since 1953, and for the devotion with which he had carried out his heavy responsibilities. Many members indicated assent. The Minister also said the Government intended to take powers in the forthcoming legislation to enable the Commission to pay him, in addition to his superannuation award, a sum of £12,500.

## Railways Board Chairman-designate

He announced the appointment of Dr. Richard Beeching as Chairman-designate of the new Railways Board. Dr. Beeching, a Director of Imperial Chemical Industries Limited, was a member of the Special Advisory Group on the Reorganisation of the Commission. To enable him to take part immediately in the preparatory work which had to be done, he had been appointed a part-time member of the British Transport Commission. On Sir Brian Robertson's retirement, Dr. Beeching would become a full-time member of the Commission and would also assume the Chairmanship until, when the reorganisation came into effect, he could become the first Chairman of the British Railways Board. Mr. Marples thanked Imperial Chemical Industries for releasing Dr. Beeching for five years. Members here expressed surprise.

Mr. Marples said that he told the House on January 30 last that in view of the special nature of this task of reorganisation it might be necessary, at the start, to bring in a few new people at the top, and that the Government would need to pay regard to the special needs in its search for the best available talent and in considering suitable terms. The Government considered it fortunate that Dr. Beeching was prepared to interrupt his career with the Imperial Chemical Industries for a period of five years to take up this especially challenging task. It would not be right to expect him, in addition, to accept a substantial financial sacrifice, and it had been decided that Dr. Beeching should be paid, from June 1 next, his present remuneration with Imperial Chemical Industries, which was £24,000 a year.

Mr. G. R. Strauss (Lambeth—Lab.) said the Minister was, no doubt, not surprised that his extraordinary announcement had been received with amazement and shock

by hon. Members on both sides of the House.

He then asked the Minister "to say on what grounds he sacked Sir Brian Robertson, who he and his predecessor had constantly praised for his ability and devotion to his work." He had replaced him by someone who, so far as was known, had no transport experience whatever, and at a salary two and a half times that which was paid to Sir Brian Robertson. What experience had Dr. Beeching in managing or organising men? Had he any knowledge whatever of the elementary principles of traffic movement? What qualifications, indeed, had he got, not only for being made a member of the Transport Commission, but also for assuming straight away the very responsible position of Chairman of the Commission. Was it not possible, he asked, to find anyone in the railway service today with the knowledge, experience and ability to take on this important task? Mr. Strauss suggested that the appointment of someone from outside industry, with no knowledge, as far as was known, of the business of running the railways, would have very serious repercussions on the whole of the railway staff, from top to bottom. In view of the appointment and the very high salary to be paid to the Chairman of the Commission, was it the Government's policy to pay similar high salaries to the chairmen of other nationalised industries which were also of great importance? Finally, he asked, had this appointment been made and was this very substantial salary being paid because of the apparent intention of the Government, that the new Railway Board, under the Chairmanship of Dr. Beeching, would have to carry out the very unpopular task of cutting British Railways services by 20 per cent?

## Chairman's retirement

Mr. Marples replied that when Mr. Strauss said that Sir Brian Robertson was sacked, he did him a great disservice. The Transport Commission, under the Government's proposals in the White Paper, was to be replaced by another organisation, and, therefore, his job would, in a very short time, come to an end. To facilitate matters, Sir Brian had been kind enough to say that he would wish to retire at a date convenient for the reorganisation. So far as the salary to be paid was concerned, Dr. Beeching was already getting it now, and that if the nationalised industries were to attract the best managerial talent and skill they had got to pay the rate for the job. Dr. Beeching's career had been absolutely brilliant. He had served an apprenticeship on the Special Advisory Group and had saturated himself with railway matters for the past nine months.

Mr. Marples went on to hope there would not be any repercussions and that a really good show was made of the railways. In regard to other similar high rates of remuneration, there might be one or two other special appointments, but there would be no change in the Government's general policy on salaries

of members of the boards of nationalised industries. Mr. Marples further said that the country and the House had to face the fact that they could not expect to get managerial talent unless they paid the same rates as the other sections of business. He saw no reason why the railways should be placed at a disadvantage, as compared with other parts of industry, in getting the best managerial skill available.

Mr. R. J. Gunter (Southwark—Lab.) inquired if it was not an understanding that Sir Brian had proposed to conduct the affairs of the Commission for another 12 months—now in June he was to go. Therefore, did not the Minister understand that some, who had fought Sir Brian over the last few years, but who had learned to respect him as a gentleman and as a man of great honour, felt complete contempt for the conduct that he had shown towards Sir Brian.

Mr. Marples explained that Sir Brian had volunteered to do this because he thought that it was in the interests of the reorganisation.

## Result of taxation on £24,000 a year

Mr. Marples, replying to questions about how much Dr. Beeching would retain of his salary after taxation, said at present the tax for a married man receiving £24,000 a year would be £17,463 7s. 6d., leaving £6,536 12s. 6d.

Mr. J. Grimond (Orkney & Shetland—Lib.) asked if the Minister could explain what was meant by his extraordinary announcement that Dr. Beeching was "prepared to interrupt his career." Were the railways to be taken seriously or not? Was there no one in this country who was prepared to make a career of the railways and to stake his reputation on making them efficient, and to treat the matter with a modicum of seriousness?

Mr. Marples told him that there were two jobs to be done here—not only running the railways, but reorganising them on the principles laid down by the House when it agreed to the White Paper proposals.

## Dismay in industry

Mr. E. Popplewell (Newcastle-upon-Tyne—Lab.) mentioned the dismay which the statement would cause to everyone engaged in the transport industry. Twenty-four thousand pounds a year was the price which the Minister was prepared to pay to destroy the railway system. His statement that Dr. Beeching was to be appointed for only a five-year period fell below even what was expected from the Government. Dr. Beeching's qualifications showed no knowledge of the railway industry or of transport and his nine months apprenticeship, which the Minister mentioned, was when he was serving as a member of the Stedeford Committee, the publication of whose findings was still awaited. Was not this further evidence of the need for those findings to be published? His pledge when presenting the White Paper, that there would be opportunities for railwaymen in the higher branches of the service, was now completely nullified, and everyone engaged in the industry who had some know-



ledge of it would be disappointed and disheartened by the announcement, and the morale of everyone connected with the industry would deteriorate still further.

#### Demand for debate

Mr. G. A. Brown (Belper—Lab.) said that what the Minister of Transport had said had come as a great shock to many. The announcement raised wide issues which could not be avoided by reference to income tax, because it was not known what Dr. Beeching's liability to tax would be, or what expense allowance, if any, was involved. The announcement also raised grave issues for the other boards of nationalised industries and the salaries of their chairmen and members, as it did for the members of the Transport Commission. It also raised grave issues about the Commission's future policy. In view of the Minister's announcement, and the reaction to it, would the Leader of the House find time in which this remarkable statement of the Minister could be properly debated?

The Secretary of State for the Home Department (Mr. R. A. Butler) told the House that its time was fully occupied until Easter, but there were undoubtedly opportunities when the matter could be raised.

#### Statement in the Lords

The Paymaster General, Lord Mills, made a similar statement in the House of Lords.

Viscount Alexander of Hillsborough thanked him for the statement and the first comment he made was that the view of the Minister with regard to the services of Sir Brian Robertson was shared. How he had managed to do as much as he had done, with all the political interference he had had for the last seven-and-a-half years, was not known. The Government was not being especially over-generous to him in the allocation it was making to him, although it was quite generous for the period involved. He went on to ask what sort of compensation, through this change in Government policy, was going to be given to other services of the Transport Commission. There was not the slightest indication yet as to what would be done in that line. There were various degrees, periods and characters of services which had been rendered, and the Government could be assured that, in view of the step taken here, there would be many anxious inquiries as to their intentions with regard to compensation for a change in a given situation which was entirely due to Government policy. He referred to the new appointment and said it was an extraordinary position in which Parliament was placed. As to the academic qualifications and a certain amount of commercial experience of Dr. Beeching, there could be no question at all. But Parliament had to face a situation in which a salary was to be paid on a commercial basis, according to the standards of Imperial Chemical Industries Limited, for a period of five years, in order to carry out a reorganisation which was apparently to be conducted on lines unknown to Parliament. It was to be conducted under the control of a member of the Group who made the recommendations as to what should be done, and the Government had not thought fit to submit those recommendations or that Report to Parliament. The cost would be £24,000 a year, with no indication at present whether that was completely inclusive of all super-

annuation charges or compensation involved.

Lord Mills, in reply, stated that the Government had reached agreement with Sir Brian Robertson, who was perfectly satisfied that the Government had no desire except to acknowledge his services and deal generously and properly with him. He said that the Government intended to take powers in forthcoming legislation which would enable it to deal with any other member who might have to be dealt with.

As regards the question of the remuneration proposed to be paid to Dr. Beeching, it was merely continuing for him the remuneration he now enjoyed outside. Dr. Beeching should not be asked to suffer in this respect. He was being loaned from the I.C.I. and the Government were merely continuing his remuneration.

Lord Taylor thought that the position applied whenever an industrialist joined the Government. Yet the Government paid its Ministers substantially less than, perhaps half of, what was offered to Dr. Beeching.

Lord Stonham said the White Paper made a feature of encouraging railwaymen to believe that they might achieve the highest posts. What principles had governed the Government's decision in this matter in choosing, instead of an experienced railwayman like Mr. Grand, a gentleman, however distinguished and experienced in business, who apparently had had no experience whatever in railways and transport?

Lord Merrivale welcomed the fact that Sir Brian was to be granted an *ex gratia* payment for his services. He did not doubt in any way the technical capabilities of Dr. Beeching, but asked what administrative or operational experience he could have had of railways. He would be employed for a period of five years, which seemed to be the period during which the major part of the reorganisation and modernisation would take place. Somebody with great experience of the operational side of railways should have been considered.

Lord Mills, in reply to Lord Stonham, said that it was indeed desirable that every encouragement should be given to those in the railway service and read from the Minister's statement of January 30:—"A new structure and reorganisation can do a great deal to make railway problems manageable, but of equal importance is the quality of the men who will provide leadership, and the morale of staff and workers. The railways must have the best leadership available. There must be opportunities in all parts of the railways for those with ability to get to the top. At the start it may be necessary to bring in a few new people. The task is challenging, and I believe that the time is crucial. The task is not only running one of the biggest industries in the country, if not the biggest; it is the task of transforming its structure, its outlook and its finances. The Government will have to have regard to these special needs in their search for the best available talent and in considering the terms on which it can be obtained."

That seemed to him to answer the question. There were many people concerned in the management of the railways, and many people with great experience of railways, but what was needed at this time was to have as Chairman of the Railways Board someone who had already studied the problems and who, in the opinion of the Govern-

ment, was competent to take over that charge.

#### Opposition motion

In the House of Commons on March 21, Mr. G. S. Strauss (Vauxhall—Lab.) moved: "That this House deplores the statement of the Minister of Transport on his appointment of a new Chairman of the British Transport Commission."

He said that the implications of the statement affected a large and vital section of public life. It was bound to arouse maximum resentment among the men whose co-operation and good will was essential for any successful reorganisation of the railway system. It would have serious reactions among the Chairmen and board members of the other nationalised industries. It inflicted grave damage on the tradition of public service. The Opposition was as anxious as anyone that the new Chairman of the British Transport Commission, later to be Chairman of the Railways Board, would succeed in the great task which would confront him, and it would do its best to support him in his endeavours to make the railways efficient and prosperous. It hoped that the Minister would be able to give some greater re-assurance about Dr. Beeching's qualifications.

#### Railwaymen's reaction

He said that he had made inquiries among senior executives of the railway staff to find their reactions. It was certain, as far as he was able to judge, that they were appalled by what the Minister had done, appalled by a combination of the facts that the head of the new set-up would be ignorant of railway affairs and his chairmanship would be only, in the words of the Minister, an interruption of his career with I.C.I. They felt that this was not only the wrong way of appointing a man to this difficult and important post, but an insult to present management and senior staff. If the Minister had looked among existing railway staff for the right man and failed, had he looked among the large and able staffs of other nationalised industries? It was difficult to believe he could not have found the right man. As it was they could not escape the feeling that the Minister had plumped for a private industry man mainly because of his political prejudice that private industry was in every way superior to public industry.

#### Himalayan salary

The aspect of Dr. Beeching's appointment which had shocked the public was that his remuneration would be based on an inflated, prestige salary scale paid to the directors of just a handful of companies, a scale wildly out of alignment with the remuneration paid in most other industries, and even more so with that paid to all who served their country in high and responsible public posts. The only acceptable principle on which a Government could properly conduct the nation's affairs was to fix a fair rate for each type of job within its service, and having fixed that rate it must stick to it and not start making a series of spectacular exceptions. Dr. Beeching's Himalayan scale of remuneration was bound to have repercussions among Chairmen and other members of the boards of nationalised industries. What would happen next? Would there be a general upward revision of salary scales in the



nationalised industries? The conclusion of all this was inescapable. The Government had through lack of forethought committed a grave blunder which had been exacerbated by the ill-conceived, inept, and clumsy statement made to the House by the Minister of Transport. This was all the more disturbing because of the Minister's past behaviour towards railway matters and his known attitude towards railway affairs.

#### Minister's reply

Mr. Marples said that Dr. Beeching's task would be huge and it was an immense responsibility for any one man to undertake. The Government was convinced that the qualities he was known to possess were those that the situation demanded. Dr. Beeching's career both in industry and elsewhere had shown that he was a brilliant man with a very considerable experience over a wide field of industry and great skill in negotiation. More important still he had great qualities of patience, calmness in emergency, resolution and ability to see the other man's point of view. Not only had he had a brilliant academic career, he had very varied experience in Government service and in industry.

Members must have realised that acceptance of the post of Chairman was not an easy decision for Dr. Beeching. He had put himself in a cruelly exposed job. But he had accepted it and was entering five years of unremitting work in the national interest. Mr. Strauss had stressed the point that a railwayman should have been appointed, the Minister went on, and had said the men were disgruntled, but the dignified and restrained statement that the union leaders had made was most impressive. It might be that the Opposition were disgruntled but he was quite certain that the railwaymen were not. It would be a great mistake to think that only a railwayman could restore health to the railways. Certainly health and vigour could not be restored without the help of the railwaymen. The White Paper made it plain that under the reorganisation there would be greater, not fewer, opportunities for railwaymen to advance to board level but the introduction of new blood from time to time was of advantage to any organisation, be it nationalised or not.

#### Trade union comment

Mr. R. J. Gunter (Southwark—Lab.) said that the Minister really ought not to go that far. He was glad he had noted the dignified comment of the railwaymen but they had never commented in the way the Minister said. They might have said they preferred a railwayman but they would wait to observe on the quality of Dr. Beeching. They had got to live with Dr. Beeching for a number of years, but there was no enthusiasm at any level in any union about the appointment.

Mr. Marples said it had been questioned whether Dr. Beeching should be paid £24,000 a year. Dr. Beeching was coming to a job which in many ways was even more difficult than his present one. It was a bigger job. The railways employed over half a million men. He was assuming the responsibilities of Chairmanship, and in his present job he had not had that. He would not only be running the railways but helping in a huge reorganisation. He would be liable to criticism which could at times be merciless and not always reasonable. I.C.I. had undertaken to safeguard Dr. Beeching's

pension rights during the five years. It had been extremely generous in letting the Government have one of its most brilliant men and preserving his pension rights. The railways were now losing at a rate of over £300,000 a day. If Dr. Beeching's efforts could reduce this he would have deserved well of Britain. If a man who was paid £24,000 a year gross could alter that situation that was a jolly good piece of business for Britain.

#### Exceptional position

Discussion had taken place on the possible repercussions on other nationalised industries of paying £24,000 a year to Dr. Beeching. But the position on the railways was exceptional and the salary proposed for Dr. Beeching was exceptional. Consequential changes for the general level of salaries in nationalised industries were not involved. The wages of the staff of British Railways would continue to be negotiated through the appropriate machinery.

The Government's first aim, regardless of all other considerations, was to get the right man and they believed they had got him.

#### Pre-arranged plan

Mr. G. Darling (Sheffield, Hillsborough—Lab.) said that Dr. Beeching must have had some plan for railway reorganisation and he suspected that the plan had already been cooked up and that it came out of the secret Stedeford report. If that was so, both Dr. Beeching and the Minister would have a pretty rough time.

Mr. A. R. Wise (Rugby—C.) said the problem was not whether users would pay the prices for the services provided, but whether the railway could provide services at prices users were prepared to pay. The principle which was being imposed on Dr. Beeching must be reversed before he got a fair chance of doing his job.

#### Wide implications

Mr. G. D. N. Nabarro (Kidderminster-Worcestershire—Con.) said that if the railways were to be made competitive with other forms of transport, efficient and profit-earning instead of loss-making, not only was it necessary to pay the Chairman at the market rate, but to attract the right men to senior positions underneath the Chairman, competitive rates must also be paid. The implications of what the Minister had done were somewhat grave. Chairmanship of the railways was certainly no more important than Chairmanship of the National Coal Board, or the Chairmanship of the Central Electricity Generating Board.

The motion was rejected by 306 votes to 214—Government majority, 92.

## Questions in Parliament

#### Building sites over goods yards and sidings

Mr. Robert Allan (Paddington S.—Con.) asked the Minister of Housing and Local Government on March 14 what consultations he had had with the British Transport Commission on the question of building office and housing accommodation over their goods yards and sidings, particularly in London and with what results.

Sir Keith Joseph, Parliamentary Secretary, replied there had been none. The Minister of Housing had discussed this matter with

the Minister of Transport, who had assured him that the British Transport Commission were giving close attention to the development of such sites.

Mr. Allan said in many London boroughs there remained no land available for development except that which was owned by the B.T.C., and that the only hope of reducing housing lists and tackling deteriorating properties was by the acquisition of this land quickly for housing development.

Sir Keith Joseph replied that the Minister of Housing had already asked planning authorities by circular to do what they could to prevent the waste of land. Any proposal such as this was a matter in the first place for the planning authority.

Mr. Allen asked the Minister of Transport, on March 15, if he would give a general direction to the British Transport Commission to give all facilities to local authorities desiring to build office and housing accommodation over their goods yards, sidings and other properties.

Mr. Marples told him that the British Transport Commission were willing, where railway operations permit, to discuss the leasing of sites to local authorities or other developers, for building purposes.

Mr. Allen asked whether the Minister would make sure that, at local levels, applications were not turned down out of hand, but were referred to such higher levels as might be in contact with the Minister of Housing and Local Government.

Mr. Marples assured him that if he had a particular case in mind, and would write to the Chairman of the B.T.C. it would be looked into.

#### Disposal of land for development

Mr. J. T. Price (Westhoughton—Lab.) asked the Minister if he would resist all attempts to put pressure on the British Transport Commission to unload valuable development land for the benefit of speculators, because many on the Labour side of the House thought that that was the sort of racket that was developing.

Mr. Marples said they were entirely mistaken.

Mr. John Hall (Wycombe—Con.) wanted to know if the Minister was aware that many worthwhile schemes for building over goods sidings in London and elsewhere had come to nought because the B.T.C. could not make up its mind whether or not it wanted to use the land? If the Commission could not use these facilities usefully and economically, should it not make them available, for a financial consideration, to those who could?

Mr. Marples said that when the reorganisation envisaged in the White Paper, and accepted by Parliament, was completed, that sort of consideration would be taken into account.

Mr. G. R. Strauss (Vauxhall—Lab.) asked if the trouble had not been that the Government had, so far, denied the Commission the right to develop property itself, and that the Commission had been properly chary and unwilling to let valuable land to a private speculator who would make large sums out of it which should accrue to the Commission?

Mr. Marples did not think him quite accurate. The restrictions on property were placed on the Commission by the Act. The Government was removing those restrictions.

## Automated gear production

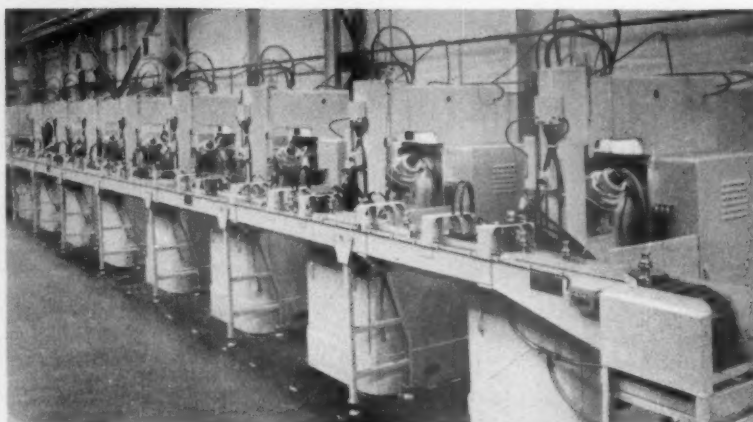
The technique of continuous-flow production, which is now the accepted practice for the manufacture of large quantities of machined components, is normally carried out by the use of specialised transfer machines, designed and built around a single component. Charles Churchill & Co. Ltd. gave a demonstration last week of its Link-Line technique which achieves a high rate of production and has a number of advantages over the specialised transfer machine.

In this system an automatic conveyor line is used to link a series of standard production machines fitted with automatic machine-loaders. A high degree of flexibility is achieved and production-time cycles on a variety of operations are readily balanced by the duplication of machines as required.

For the demonstration a Link-Line of 23 gear production machines was used. This fully automated gear-production line, built for the Austin Motor Co. Ltd., has an output of 4,500 gears in 70 hr. The line incorporates five different types of machine and three washing stations. Automatic handling throughout the 200 ft. component travel is achieved by the use of only two types of automatic machine-loader and two types of between-machine conveyor.

Operations on the cluster gear involve hobbing, shaping, chamfering, tooth rounding, shaving, and grinding. The C.G.M. hydraulic auto-loaders are controlled by micro-switches on the conveyor. Provision is made in the work flow for component storage and when this storage space is full the preceding machine is automatically switched off. With the Link-Line system any machine can be isolated, either for maintenance, cutter change, or operation as an independent unit, without affecting other machines in the line.

An important aspect of this flexibility is



*A bank of Churchill rigid-hobbers*

that the most suitable type or make of machine for any particular component or operation can be incorporated.

## Isle of Wight ferry

The double-end passenger and vehicle ferry *Fishbourne* to the order of the British Transport Commission for British Railways Southern Region services between Portsmouth and Fishbourne was successfully launched from the shipyard of Philip & Son Ltd., at Dartmouth on March 15, 1961.

The naming ceremony was performed by Lady Cecilia McKenna, the wife of Mr. David McKenna, Assistant General Manager, Southern Region, British Railways.

The *Fishbourne* is powered by two Crossley E.G.N. 8/65 diesel engines each developing 320 b.h.p. at 650 r.p.m. each driving a Voith Schneider propeller. The propellers are at each end of the vessel. Two Mawdsley

generators each with a capacity of 60 kW. at 225 V. d.c. driven by Ruston 6YEZ diesel engines are installed.

The vessel will carry commercial vehicles and cars and approximately 160 passengers, with a speed of about 10½ knots. The passenger accommodation consists of a lounge on the main deck and a buffet and a lounge on the lower deck.

## Staff & Labour Matters

### Company-owned bus undertakings pay claim

In talks at the Ministry of Labour on March 17 leaders of the Transport & General Workers Union and Municipal & General Workers Union were told that the Employers side were unwilling to re-open negotiations in connection with the unions' claim for improved rates of pay and conditions of service for employees in the company-owned bus undertakings outside London.

After earlier rejection of the unions' claim by the employers, the unions decided to ask the Minister of Labour to intervene, and there have since been discussions between the employers' representatives and the Ministry's conciliation officers. It was the result of these talks which was conveyed to the unions' representatives on March 17.

A similar claim in respect of workers in municipal bus undertakings is going to arbitration, and it may be that further action by the union representatives in connection with the company-owned buses will be deferred pending the outcome of these arbitration proceedings. Meanwhile, the trade union sides of the joint councils for company and municipal-owned buses met on March 21 to discuss the situation.

### Strike action decision

The representatives of the trade unions of the National Joint Council for the Omnibus Industry at their meeting on March 21 decided on strike action in support of their rejected claim, as from a date to be determined. This action is subject to ratification by the executives of the respective unions which, in addition to the T. & G.W.U. and National Union of General & Municipal Workers, include the N.U.R., E.T.U., A.E.U., and National Union of Vehicle Builders.

The differential between London and provincial wage rates, which was 7s. a week



*Lady Cecilia McKenna with (centre) Mr. David McKenna and Mr. J. A. Philip*

in the case of drivers, is now 25s. because of the special increase given to London men last October in an attempt to overcome the serious staff shortage position. The employers side of the National Joint Council takes the view that there is not the necessity for a similar pay advance in the country areas.

## Improved Freight Services from Scotland to the West

Through express freight trains from Edinburgh to Bristol, and from Law Junction (Lanarkshire) to Cardiff via Carlisle and Chester have been introduced by the Western Region of British Railways.

The Bristol train is scheduled to leave Edinburgh (Lothian Road) at 9.20 p.m. (except Saturdays) and arrive at Bristol (Stoke Gifford) at 6.55 p.m. the following day, and the Law Junction to Cardiff train is booked to start at 5.30 p.m. (except Saturdays) and reach Cardiff (Newtown) at 9.53 a.m. next morning.

The trains give a direct service between the "collecting" marshalling yards in Scotland and the "distributing" yards outside Bristol and Cardiff, avoiding the necessity to break the trunk haul for further re-marshalling at yards *en route*.

The destinations of the wagons may be for beyond Stoke Gifford, i.e., to any point in South Western England, or for beyond Cardiff, i.e., to any point in South or West Wales, but the greater part of the journey will have been completed without interruption on the way.

Schedules of two existing express freight trains from Scotland to the Western Region have been adjusted so that all the four services form an integrated pattern of through services to the most suitable destinations. The adjusted services are the 9.26 p.m. (except Saturdays) from Glasgow (Buchanan Street) to Wolverhampton (Oxley Sidings), due at 4.7 p.m. next day, and the 2.5 p.m. (except Saturday), Ayr (Falkland Junction) to Saltney (near Chester) due at 11.0 p.m.

## CONTRACTS & TENDERS

British Railways, Eastern Region, has placed the following contracts:

William Cowlin & Son Ltd.: construction of an amenities building, prestressing beds and ancillary works at Taunton Concrete Works

Pelapone Limited: supply, erection and commissioning of standby supply generating set and transformers in the signalbox at Reading

Pelapone Limited: supply, erection and commissioning of standby supply generating set and transformers in the signalbox at Slough

Willoughby (Plymouth) Limited: work to be performed in connection with the annual overhaul and survey, 1961, of ss. *Sir John Hawkins*

Penarth Pontoon Slipway & Ship-Repairing Co. Ltd.: work to be performed in connection with the annual overhaul and survey, 1961, of ss. *St. Andrew*

John Boyd & Co. (Engineers) Ltd.: supply, delivery and erection of one electrically-driven traverser at the Carriage & Wagon Works, Swindon

Stone & Co. (Bristol) Ltd.: provision of office accommodation for the Western Area Police headquarters

Automatic Telephone & Electric Co. Ltd.: provision and installation of a private automatic telephone exchange at Shrewsbury

Anglo-Scottish Construction Co. Ltd.: erection of a telephone exchange office for the District Engineer, a retaining wall and substructure for a power signalbox, temporary parcels accommodation, and an electrical sub-station at Reading Station

Wharton Crane & Hoist Co. Ltd.: supply, delivery and erection of two 25-ton electric overhead travelling cranes at Taunton Concrete Works

General Electric Co. Ltd.: provision and installation of an open wire 12-channel system between Gloucester and Worcester

Wilson Lovatt & Sons Ltd.: construction of district offices at Shrewsbury

British Railways, Scottish Region, has placed the following contracts:

Archibald Low & Sons Ltd.: pipework and pumps for diesel maintenance facilities at Eastfield motive power depot, Glasgow

Lambhill Iron Works Limited: structural steelwork for various buildings at Millerhill new marshalling yard, Edinburgh

Steels Engineering Products Limited: Coles mobile crane for Glasgow & South West Division

Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received a contract from the Jamaica Railway Corporation for 17 diesel

railcars. Each car will be powered by a Rolls-Royce six cylinder engine with twin-disc transmission driving through both axles of one bogie.

Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received a contract from the Hong Kong Government Railway for 23 carriages comprising seven bogie first-class coaches, 11 bogie third-class coaches, and five bogie third-class luggage and brake vans for the British section of the Kowloon-Canton Railway.

## BOARD OF TRADE

The Export Services Branch, Board of Trade, has received a call for the following tender:—

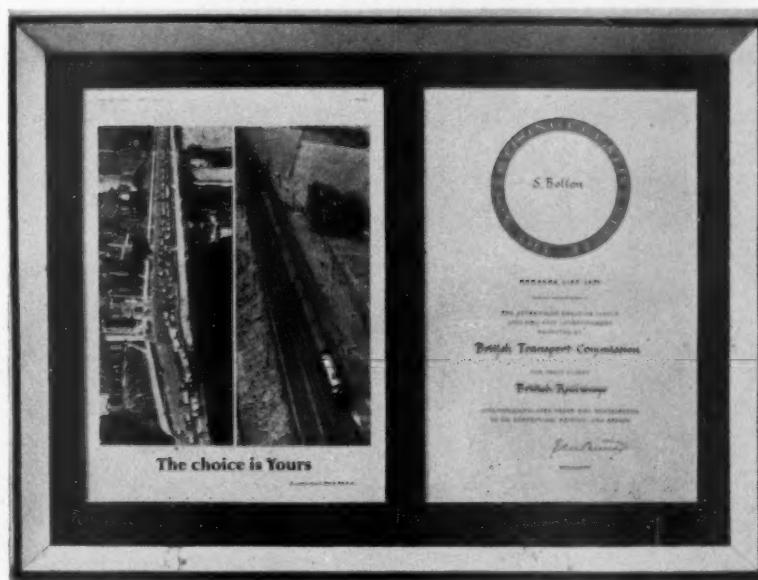
### From Pakistan:

1,200 four-wheeled 3-ft. 3½-in. gauge covered wagons (Jute), M.C.J. type, in dismantled condition, in accordance with the General & Particular Specifications and P.R.S. conditions of contract No. A-5(a)-50.

The issuing authority is the Pakistan Railway Delegation, c/o Consul-General of Pakistan, Pakistan House, 8 East 65th Street, New York 21, N.Y., to which bids should be sent. The tender No. is P. & D.-61/WAG/2/TDR. The closing date is April 6, 1961. Local representation in Pakistan, though not essential, is considered desirable. The Board of Trade reference is ESB/8947/61.

Further details relating to the above tender together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

## ADVERTISEMENT AWARD TO BRITISH TRANSPORT COMMISSION



Certificate of honour presented by the Advertising Creative Circle to the British Transport Commission for the poster "The Choice is Yours"



## NOTES AND NEWS

**Change of address.** The address of the Reynolds & Wilson Group is now: Lion House, Red Lion Street, Richmond, Surrey. Telephone: Richmond 7667-9.

**Newhaven car-ferry.** A car-ferry service, similar to that already successfully being run by the Southern Region of British Railways, between Dover and Boulogne, is under consideration for Newhaven in the same Region.

**Change of address.** James Archdale & Co. Ltd., one of the machine tool companies in the Staveley group, announces that after March 31 its sole address will be Blackpole Works, Worcester. Telephone: Worcester 27081.

**International Plastics Convention.** This convention will be held in conjunction with the forthcoming International Plastics Exhibition on at Olympia from June 21-July 1. International authorities will review advances in polymers, market prospects for polyolefins, vinyls and styrene polymers, and advances in the processing of thermoplastics.

**More colour light signals.** A further ten miles of track has been fitted with colour light signalling on the East Coast main line in the North Eastern Region. The section between Belford and Stamford Crossing has now been brought into use and with its completion there are 83 miles of main-line track between Edinburgh and Newcastle operated under the colour light signalling system. Installation of the automatic warning system is also progressing and is now in

operation on the East Coast main line between Kings Cross and Newcastle and between Stamford Crossing and Edinburgh (Waverley).

**Railway Benevolent Institution.** The board of the Railway Benevolent Institution has granted annuities to five widows, two members and one child, involving an additional liability of £189 a year. Also, 153 gratuities have been granted amounting to £1,490 to meet cases of immediate necessity. Grants made from the casualty fund during February amounted to £819 7s.

**The 600 Group at Olympia.** For the first time for a number of years the George Cohen 600 Group is to be represented at the forthcoming Engineering, Marine, Welding & Nuclear Energy Exhibition. The company exhibiting will be George Cohen, Sons & Co. Ltd., whose sheet metal working machinery department will display a selection of plate working machines. These will include a 100-ton hydraulic down-stroking press, bending rolls, shears, and a hydraulic up-stroking, bending press.

**Orders for lifting jacks.** Matterson Limited has received a number of orders from British Railways for locomotive lifting jacks, the range of which was increased last year to include jacks of 40-ton capacity. The jacks will be used for maintenance of locomotives and rolling stock at depots serving the London Midland electrification programme and the recently inaugurated Trans-Pennine diesel service. Sets of four jacks, each of 20 tons capacity, have been specified for

these depots, and in addition jacks of 25 tons capacity are about to be delivered for diesel locomotive servicing at Cricklewood.

**International Congress on Combustion Engines.** The 1962 meeting of the International Congress on Combustion Engines (C.I.M.A.C.), as already announced, will be held in Copenhagen. This will be the sixth congress in the series. The Permanent Committee of C.I.M.A.C. has decided that the seventh congress to be held in 1965 shall take place in Great Britain. It is hoped to announce the theme for the latter event before the end of this year.

**Station management.** The views of some 400 station masters on the North Eastern Region of British Railways are to be sought in small groups which will take short courses under the guidance of specialists in management techniques at Leeds, Hull, York, Middlesbrough and Newcastle. The questions discussed include: "How to improve efficiency at the station," and "How to provide a better service to the passenger." It is planned to hold similar courses for station inspectors.

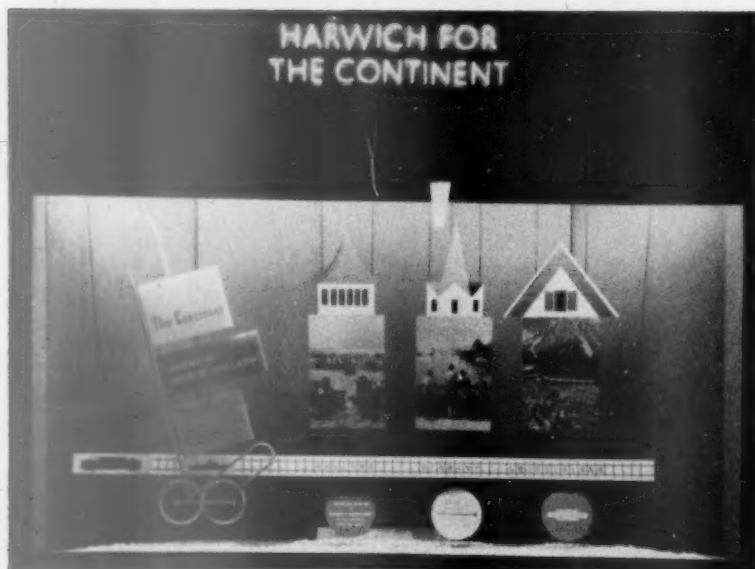
**Distributors appointed for Arborite Decorative Laminate.** The Arborite Co. (U.K.) Ltd., announce that they now have main distributors throughout the United Kingdom. All distributors now carry stocks of Arborite decorative laminates which have dominated the Canadian market since the war but could not enter the British market until 1960 because of currency restrictions.

**Institute of Transport Yorkshire Section annual dinner.** The annual dinner of the Yorkshire Section of the Institute of Transport took place at the Griffin Hotel, Leeds, on March 10, 1961. The President of the Institute, Mr. K. W. C. Grand, responded to the toast "The Institute of Transport" proposed by the Venerable Eric Treacy, Archdeacon & Vicar of Halifax. The toast "Our Guests" was proposed by the Chairman of the Section, Mr. C. T. Humpidge, who also presided, and responses were made by Mr. Henry Patten, Town Clerk of Bradford, and Mr. L. Matthews, Chairman of the Sheffield Section.

**Sunderland Station to be rebuilt.** Sunderland Central railway station is to be rebuilt. The north entrance is to be demolished to permit two stores to be built on the site. Passenger traffic will be transferred to the south entrance, where there will be new station buildings with a cafeteria, refreshment, and waiting rooms, and ticket and inquiry offices grouped around a central concourse.

**North Eastern Region drama festival.** On Saturday, March 18, British Railways' Staff Association, North Eastern Region, presented the eighth annual drama festival of one-act plays, in the Railway Institute, York. There were three entries from three groups: the Tees-side Railway Players presented "Suspicion," by Victor Lucas; the West Riding Railway Amateur Dramatic Society presented "Weatherwise," by Noel Coward, and the York Railway Institute Players presented "The Dragons in the Caves," by Brainerd Duffield and Helen and Nolan Leary. The adjudicator was John Syan,

### BRITISH RAILWAYS PUBLICITY



Continental showcase display at Liverpool Street Station





*An interested group at the British Railways modernisation exhibition*

a Staff Tutor in Drama and Elocution in the Department of Adult Education at Hull University, and a member of the Guild of Drama Adjudicators.

**Fibre-reinforced resin materials.** By a recent agreement British Insulated Callender's Cables Limited will act as distributors to the electrical industry in Great Britain and Northern Ireland of fibre-reinforced resin materials manufactured by Thermotank Plastic Engineering Limited.

**Collision at Cannon Street.** Cannon Street Station, London, was closed as a result of a collision on March 20 between two trains on the approach to the station. The collision involved the 8.35 a.m. electric train from Addiscombe and an empty diesel train which was leaving Cannon Street. The two were travelling on adjacent lines in opposite directions. The collision took place north of Borough Market Junction.

**Modernisation exhibition at Middlesbrough.** The modernisation exhibition being held by the North Eastern Region of British Railways in conjunction with the University of Leeds Adult Education Centre, was referred to in our issue of March 17. The illustration which appears above depicts, from left to right: Mr. D. S. Lewis, District Commercial Manager, Middlesbrough; Mr. J. W. Saunders, Warden, University of Leeds Adult Education Centre; Mr. E. McClelland, District Operating Superintendent, Middlesbrough, and Mr. K. A. Kindon, Traffic Manager, Tees-side, at one of the exhibits.

**Western Region service withdrawn.** The withdrawal, on and from April 3, of the local train service between Bristol and Swindon *via* Badminton has been announced by British Railways, Western Region. At present, two local trains run in each direction over this route on weekdays, with an additional service from Swindon to Bristol on Saturdays. One train, serving certain stations, runs in each direction on Sundays. Badminton will continue to be served by

some main-line express trains, but the intermediate stations at Coalpit Heath and Brinkworth will be closed completely. Little Somerford, Hullavington, Chipping Sodbury, and Winterbourne Stations will remain open for the handling of freight and parcels traffic.

**Mansion House Association on Transport.** The President of the Mansion House Association on Transport, Mr. R. A. McNeile, in proposing the toast, "The Institution of Transport" at the Association's annual luncheon, last week, declined to comment on the Minister of Transport's recent announcement but considered that it was essential that railway affairs should be placed in expert hands. Replying, Mr. K. W. C. Grand, President of the Institute of Transport, said, that unfortunately, he had

not been saturated for nine months in railway affairs but only for 42 years. As a member of the British Transport Commission, which had pledged its co-operation in implementing the reorganisation of the undertaking, Mr. Grand did not wish to comment further, but quoted paragraph 33 of the White Paper, which stated that there must be an opportunity for those on the railway with ability to get to the top. The recent appointment, he suggested, did not appear to confirm this statement.

**Vulcan Foundry receives Russian delegation.** A Russian railway mission recently visited the Vulcan Foundry at Newton-le-Willows as guests of the English Electric Company. In the picture, which appears at foot of this page, Mr. V. A. Nikanorov the leader of the delegation (Directorate of the Ministry of Communications, Chief Engineer, Locomotives) is half-way down the steps after inspecting a Type 3 diesel-electric locomotive for British Railways; just inside the cab is Mr. E. K. Lebedev (Electrical Engineer and Designer of the Moscow Sovnarkhoz); on the extreme right is Mr. N. Sytnik (Designer in the Novosibirsk Electro Locomotive Building Works of the Rostov Sovnarkhoz). With the party is Mr. H. J. Nethersole, General Manager of the English Electric Traction Division and other English Electric officials.

**North Eastern Region, special excursion to "The National."** The North Eastern Region of British Railways are to run a "Grand National" excursion to Aintree on Saturday, March 25, with dining and refreshment facilities. The train will be made up of two portions, one from Newcastle and one from Hull, joining at Mirfield to form one train to Aintree (Racecourse Station). The Newcastle train will leave at 7.15 a.m., calling at Durham, Ferryhill, Darlington, Northallerton, Harrogate, Leeds City and Dewsbury. There will be connections from the North Tyneside, South Tyneside



*Russian delegation at Vulcan Foundry, Newton-le-Willows*

and Hexham branches at Newcastle and from Saltburn, Redcar Central, Middlesbrough, Thornaby, Eaglescliffe and Bishop Auckland at Darlington. A connection from Ripon will link with the Excursion at Harrogate and one from York at Leeds City. The train from Hull will leave at 8.37 a.m. (there will be a connection from Beverley), and will call at Brough, Selby, Castleford (Central), Wakefield (Kirkgate), Mirfield, and Huddersfield. Connections from Bridlington and Driffield will link with the "Special" at Selby on the outward journey. The "Special" will arrive at Aintree (Racecourse Station) at 12.38 p.m. and will depart from the same station at 5.12 p.m.

**Londonderry & Lough Swilly Railway Company.** The annual report of the Londonderry & Lough Swilly Railway Company for the year to December 31, 1966, shows traffic receipts at £266,015 against £261,849 for the previous year. Adding miscellaneous receipts of £3,709 (against £3,159) gives total receipts of £269,724 for 1966 compared with £265,008 for the previous year. Expenditure was £251,936 (against £245,550), leaving a total net income of £17,788 which compares with £19,458. The balance from the previous account was £12,295 (£22,622). After deducting interest and other fixed charges of £1,278 (the same) and transferring £8,000 (against £22,000) to a reserve fund, the balance available was £20,805 which compares with £18,802. The directors recommend a dividend of 7 per cent on the ordinary stock. The balance carried forward is £12,701.

## Railway Stock Market

Industrial share prices were carried higher, some to new all-time peaks, in a further expansion of business on the Stock Exchange. Cheerfulness prevailed mainly because it is assumed that the better trade figures for February, which narrowed the trade gap, will be continued, and that the position will warrant the Chancellor making some tax cuts in the Budget. It is widely assumed that this will include a concession for surtax payers, a hope which has played an important part in inspiring the present optimism in stock markets. In contrast with the strength of equity shares, British Funds, although firmer, showed little tendency to improve.

Not much business has passed in foreign rails among which Costa Rica ordinary stock was again quoted at 4½, with the 6½ per cent second debentures at 125. There are 15 years' arrears of interest on the latter stock, which it is assumed in the city may at some time in the future be dealt with as part of a plan to reorganise the capital, though it should be pointed out there has been no official indication that this is contemplated. Guayaquil & Quito assented bonds were 52½, Paraguay Central debentures 17½, but Mexican Central "A" bearer debentures eased fractionally to 60½. United of Havana second income stock again kept at 6½ and Brazil Railway bonds at 4½. Antofagasta ordinary stock eased from 16 to 15½; the preference stock remained at 35½. International of Central America strengthened from £23½ to £24½, but the preferred stock eased from \$11½ to \$10½.

The Wall Street rise helped Canadian

Pacific, which rose on balance from \$41½ to \$43. The preference stock improved from 59 to 60½, while the 4 per cent debentures remained at 60. White Pass shares strengthened from \$10½ to \$10½.

West of India Portuguese stock was again 117½. Nyasaland Railways shares kept at 10s. 6d. with the 3½ per cent debentures 35½, while elsewhere, Midland of Western Australia ordinary stock has been marked up from 6½ to 8.

Among shares of locomotive builders and engineers, North British Loco. continued their improvement and at 8s. 4½d. compared with 7s. 4½d. a week ago, but on the other hand, Birmingham Wagon at 20s. 7½d. remained at the lower level recorded a week ago. Wagon Repairs 5s. shares at 19s. 3d. were within 3d. of a week ago, while Gloucester Wagon 10s. shares showed a small gain at 10s. 4½d. Charles Roberts 5s. shares, however, eased afresh to 8s., and Beyer Peacock 5s. shares were easier at 7s. G. D. Peters were again quoted at 20s. Westinghouse Brake at 40s. 3d. compared with 40s. 6d. last week.

Pressed Steel 5s. shares strengthened from 32s. 6d. to 32s. 9d. and Dowty Group 10s. shares were firmer at 37s. while elsewhere under the influence of the results and higher dividend, Pollard Bearing 4s. shares strengthened further to 38s. 9d. Ransome & Marles 5s. shares remained at 22s.

A sharp advance from 80s. to 83s. 3d. was recorded in Tube Investments, and in Leyland Motors, which at 89s. compared with 84s. 7½d. a week ago. Moreover, Vickers have risen from 31s. 9d. to 33s. 3d., Guest Keen from 91s. 9d. to 94s. 9d., and T. W. Ward from 74s. 6d. to 75s. 6d.

The recent advance brought some profit-taking in electricals, among which G.E.C. were 38s. 6d. compared with 39s. 6d. a week ago, and A.E.I. 47s. 9d. compared with 48s. 6d. English Electric were 40s. 6d., or within 3d. of a week ago. Crompton Parkinson 5s. shares kept at 14s. and Mather & Platt at 46s. eased a few pence on balance. Babcock & Wilcox advanced from 33s. 9d. to 36s. 3d., and Clarke Chapman at 49s. 3d. compared with 45s. 3d. a week ago.

## Forthcoming Meetings

March 24 (Fri.).—The Railway Students Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Annual dinner and dance at the school.

March 24 (Fri.).—The Institute of Transport, at the Dorchester Hotel, Park Lane, W.1, at 6.45 p.m. Annual dinner.

March 25 (Sat.).—The Permanent Way Institution, London Section, visit to International Exhibition of Permanent Way Plant & Equipment, at Elst, Holland.

March 27 (Mon.).—The Institute of Transport, South Wales & Monmouthshire Section, at the Angel Hotel, Cardiff, at 7 p.m. Annual dinner and visit of President.

March 28 (Tue.).—The Institute of Transport, West Middlesex Group, at the Control Tower, London Airport, at 6.30 p.m. "The travel agent," Mr. R. A. Loraine.

March 28 (Tue.).—The Institution of Railway Signal Engineers, Bristol Section,

at Chippenham, at 6 p.m. "Train describers," Mr. M. E. Leach.

March 29 (Wed.).—The Institute of Traffic Administration, Devon & Cornwall Section, at the South West Gas Board Theatre, Plymouth, at 7.15 p.m. "Goods vehicle licensing," W. A. Foster.

April 5 (Wed.).—The Institution of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. Annual general meeting.

April 6 (Thu.).—The Institution of Electrical Engineers, at Savoy Place, London, W.C.2, at 5.30 p.m. "Technical and economic aspects of the supply of reactive power in England and Wales," Mr. W. Casson, and Mr. H. J. Sheppard.

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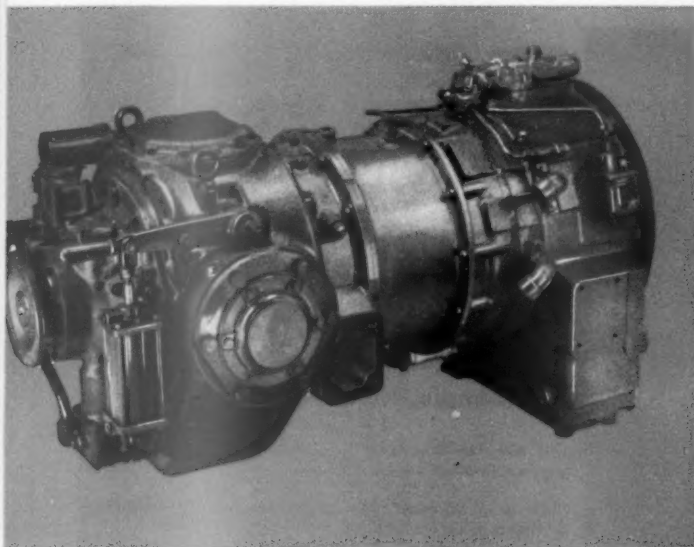
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The photograph and drawing show a reversing unit produced by Rolls-Royce Ltd. for use on railcars with their diesel engines and torque converters.

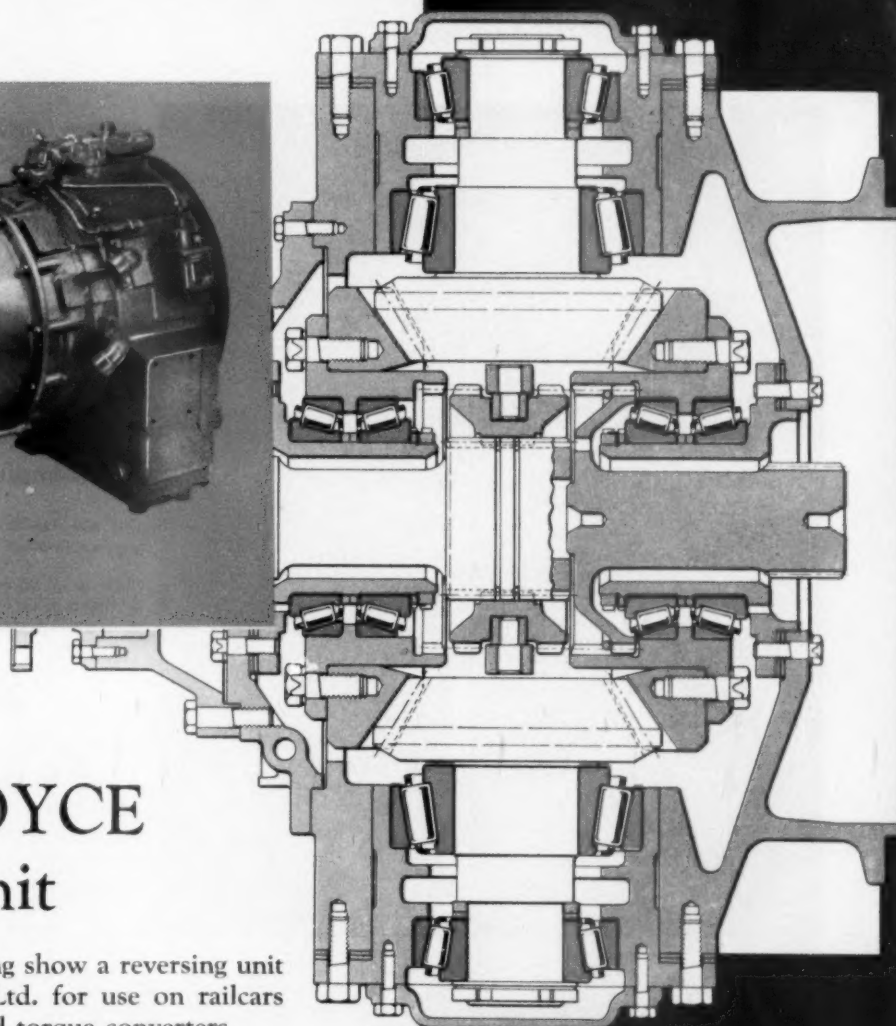
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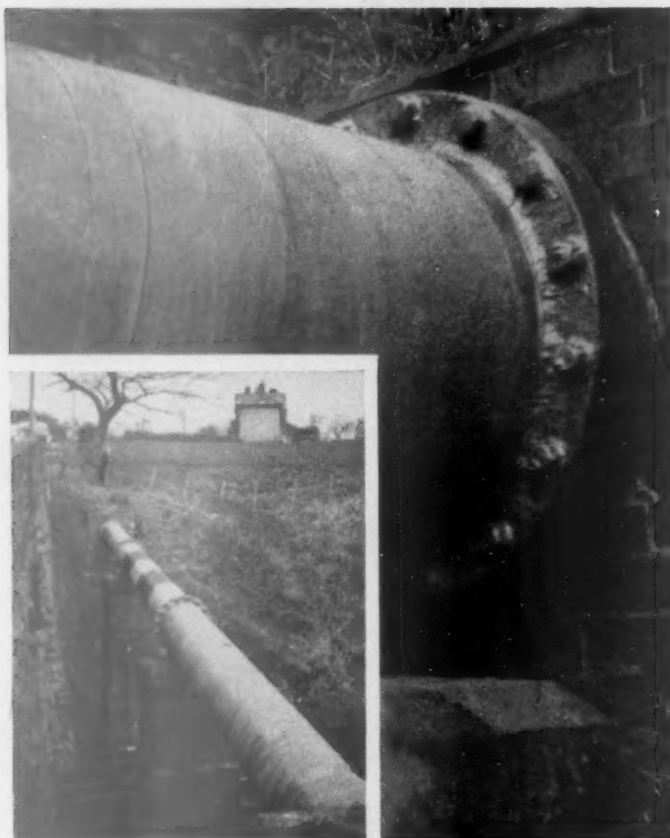
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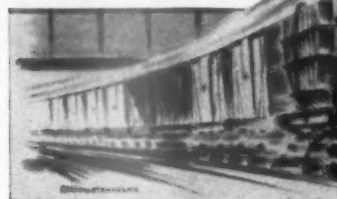
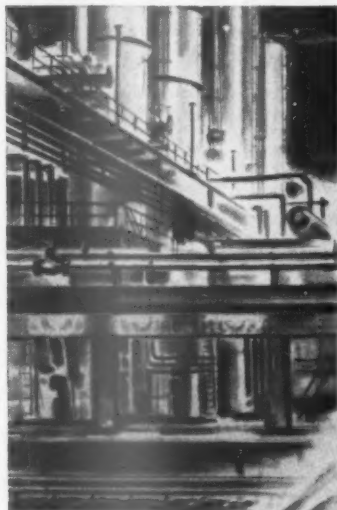
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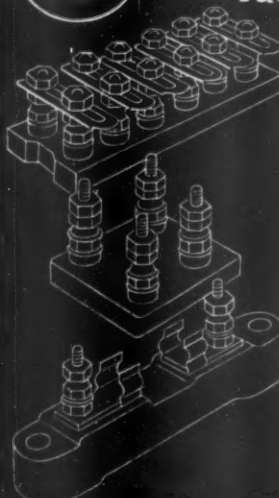
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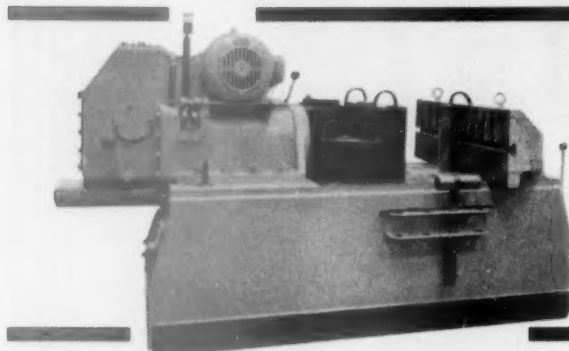
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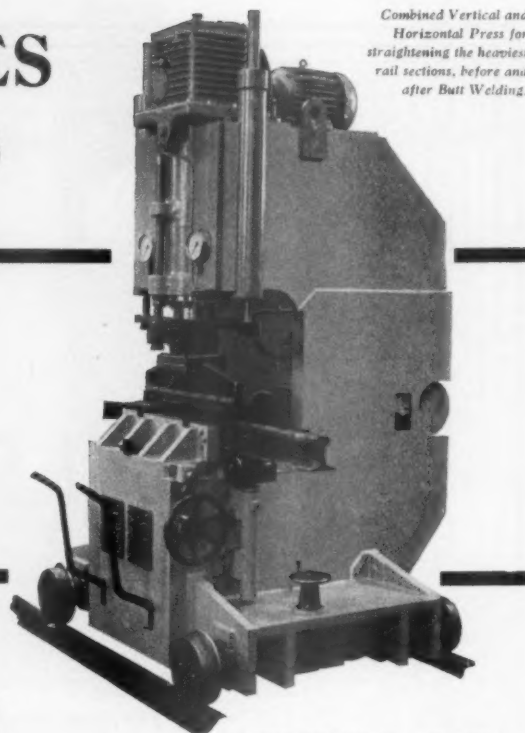
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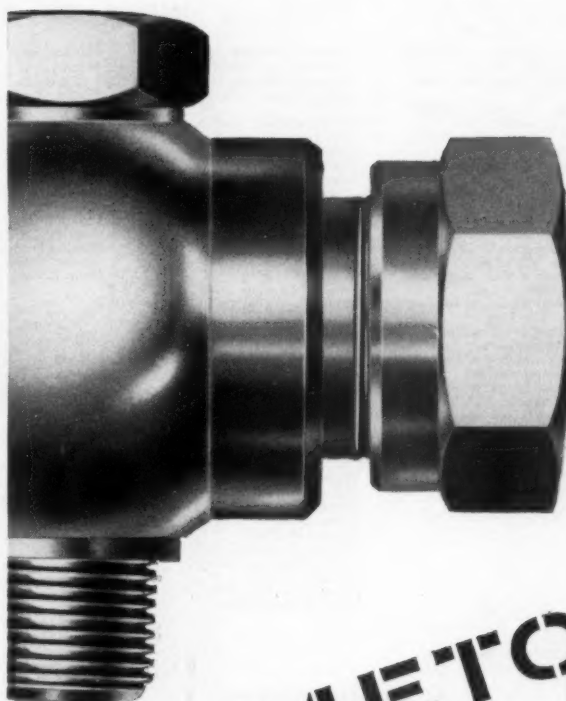


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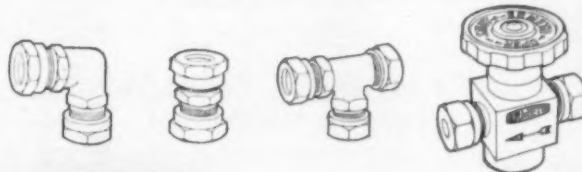
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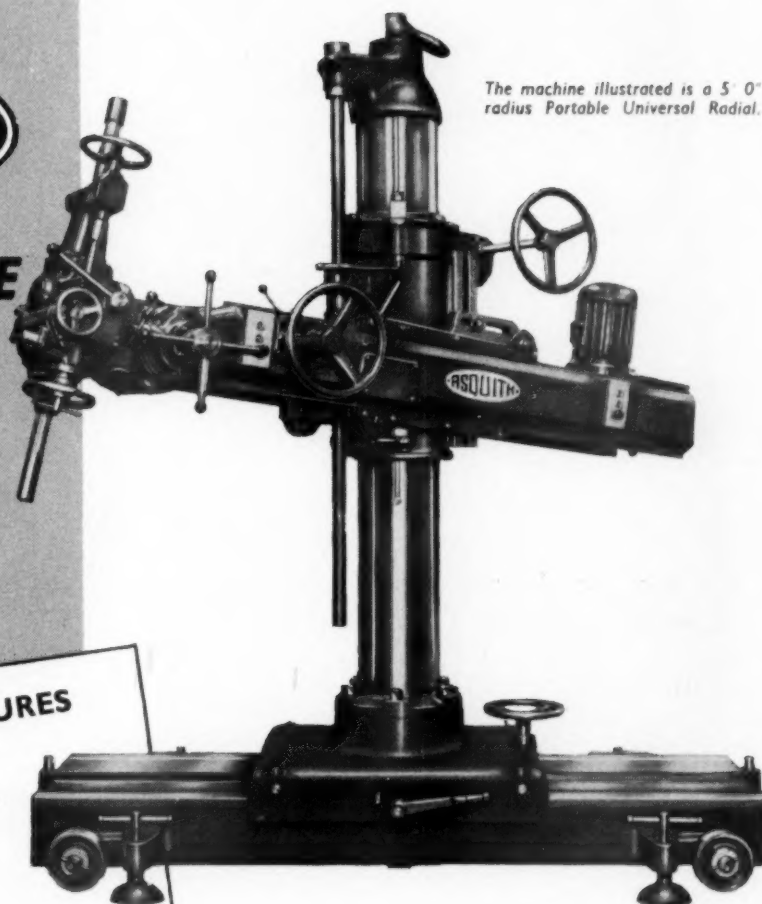


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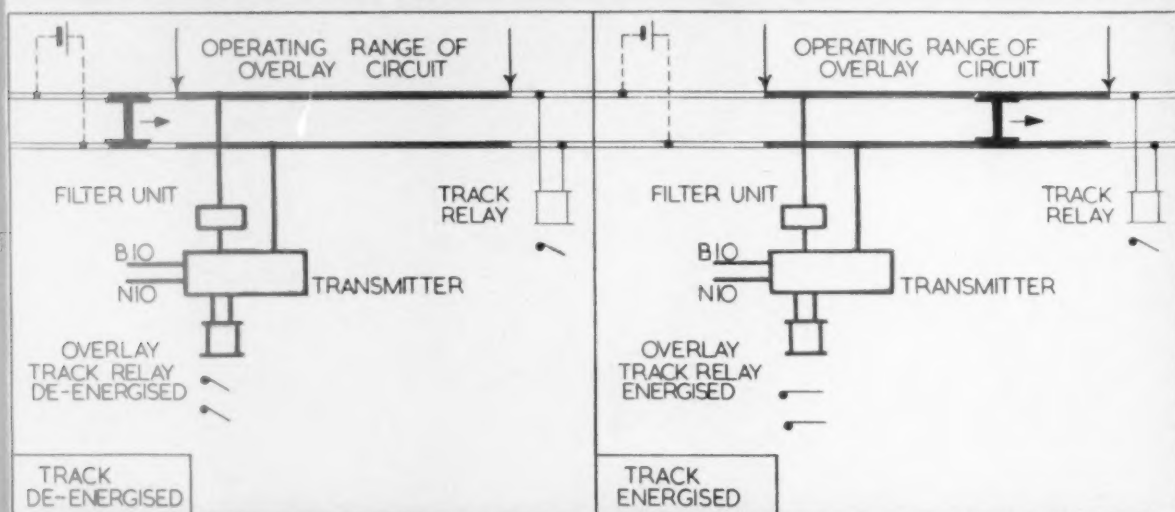
Member of the Asquith Machine Tool Corporation

Sales and Service for the British Isles

**DRUMMOND - ASQUITH LIMITED**

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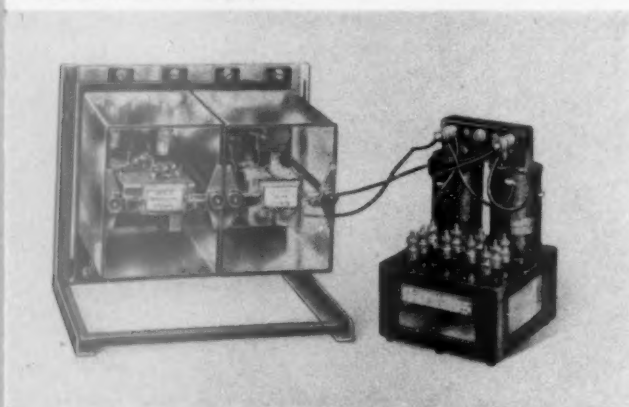
KING EDWARD HOUSE, NEW ST., BIRMINGHAM Phone: Midland 3431. Also at LONDON Phone: Trafalgar 7224 & GLASGOW Phone: Central 0922



## AEI-GRS OVERLAY TRACK CIRCUIT

This track circuit is superimposed on an ordinary track circuit providing a short, independent track for special purposes such as level crossing warning circuits, call on signal release, etc. By the use of electronically generated 10 k-c energy it does not interfere with the working of the ordinary track circuit and no insulated rail joints are required. Only two connections to the rails are necessary. The circuit is completed by the train, the pick up range being between

*Overlay track circuit equipment*



80 to 120 feet.

The overlay track circuit operates from a 9-12-v battery which can be arranged for low rate charge from an AC supply.



**Associated Electrical Industries-GRS Ltd.**

132-135 LONG ACRE, LONDON W.C.2.

TEM 3444



